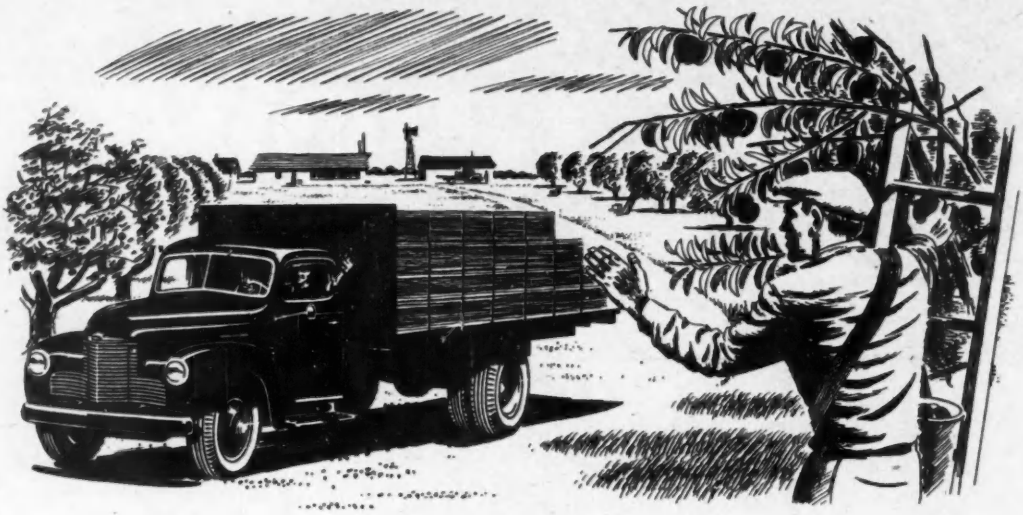
American FRUIT GROWER

JUNE • 1949



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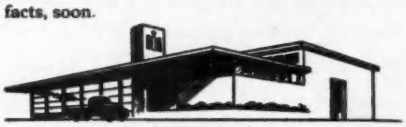

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DOW
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The Dow Chemical Company
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JUNE 1949

VOL. 69 No. 6

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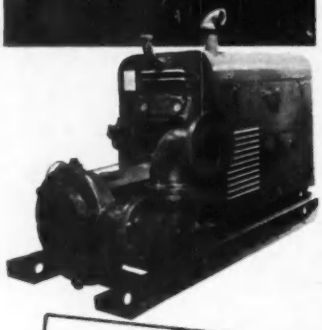

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LETTERS TO THE EDITOR

Brown Rot

Gentlemen:

Outright and thorough-going improvements in the methods used in the peach industry for the control of brown rot must be forthcoming if the industry is to survive in Michigan. While we need to know more about the fungus and technical phases of control, nevertheless, this is not the most important consideration. There is a peculiar philosophy and psychological complex which must first be mastered.

I mean that until the grower's philosophy and responsibility changes in regard to brown rot we have no sound basis upon which to proceed. Most growers recognize the leaf-curl situation, the apple scab problem, and the codling moth problem and work and adjust definitely to control them. Not so with brown rot. This disease has always been a catch-as-catch-can problem, a proposition to get by with, to gamble with, and to let the other fellow worry about and hold the bag on. Furthermore, our grading laws do not have much bearing on the brown rot phenomenon, especially at shipping point; whereas in regard to scab and codling moth, everyone knows the story.

And so, I say that as rapidly as possible we should get to a new point of view—simply that the brown rot problem is an inevitable factor in peach production which is comparable to other fully recognized problems with apples and pears. We should accept certain minimum and absolute measures in every season as a necessity and a requirement or else stop planting trees and get out of this business in Michigan.

Here is a problem that we must face with a proper perspective, philosophy, and psychology, and the sooner the better. We simply must get down to business and control brown rot on peaches.

Michigan G. F.

Dusting Data

Dear Sirs:

I would like further information regarding Mr. Lewis' article, "My Experiences Dusting Apples and Peaches," which appeared in the February issue. When dusting in the rain and a probable high wind, can one depend on drift for effective coverage? During a protracted rain—four or five days—would a second coverage or more be desirable?

Galesville, Wisc. Fred Sacia

Alfred G. Lewis, Jr., author of the article in question, writes, "Normally in our part of the country if we get rains in the spring it is usually fairly quiet weather—at least quiet long enough for us to get our dust on. We very seldom dust in high winds but prefer to wait, in the hope that the wind will go down. However, if the trees are wet and we have to finish dusting apples in the wind, we have had fair success; but we do not advise it if there is any way of avoiding dusting in the wind. I believe if you watch the weather closely enough you can get your dust on while it is fairly quiet.

During a protracted rain of four or five days it is highly desirable to put on a second or even a third application of dust. Two years ago we had a week when we put three applications on the orchard within a period of six days. I believe your Extension Service could help you in regard to the time of this application. This type of weather is the worst for scab and needs very close watching. In fact we go on the assumption that one extra application of dust is extremely good insurance if there is any question in our minds as to whether the dust will hold through a long wetting period. The value of the fruit in comparison to the cost of one extra application of dust is such that we do not take any more chances than necessary because we have found that one application missed will cause a great deal of damage in the way of scab control."—Ed.

Colored Cloth Repels Deer

Dear Sir:

I noticed your editorial in the March, 1949, issue in regard to damage done by deer.

Deer in Missouri are not as thick as they are in other States, but you may be interested in the experience of one Missouri farmer who also happens to be a student of wildlife and an expert coyote hunter.

This farmer has successfully protected his two-acre garden patch, which is adjacent to a large timbered area where deer are plentiful. He found that by hanging strips of colored cloth (different colors) at intervals of 20 to 25 feet on a wire that was suspended about 10 feet above the ground, and by changing the location of the individual cloth patches every seven to 10 days so that a different color appeared, even though it was in the same location on the wire, the deer stayed entirely out of the area.

Another item that may interest you is that moles, mice, and gophers are readily controlled by inserting green castor beans in the runways.

Farmington, Mo. G. David Bauch

Small Fruit Grower Likes American Fruit Grower

Dear Sirs:

I am taking this opportunity to thank you for the very fine journal you put out. I am a market grower of small fruits—raspberries, strawberries, currants, etc.—and never fail to find something of interest.

I particularly like the articles giving historical sketches on the various fruits; also those describing practices of other growers.

Victoria, B. C. Percy L. Pearce

Mulberry Fruit Can Be Good

Dear Sir:

I would be glad to hear from any reader of American Fruit Grower who might know of a seedling or ungrafted mulberry tree whose fruit is considered to be of exceptional size and quality.

Carlisle, Pa. Edward E. Rupp, Jr.

Spray Compatibility

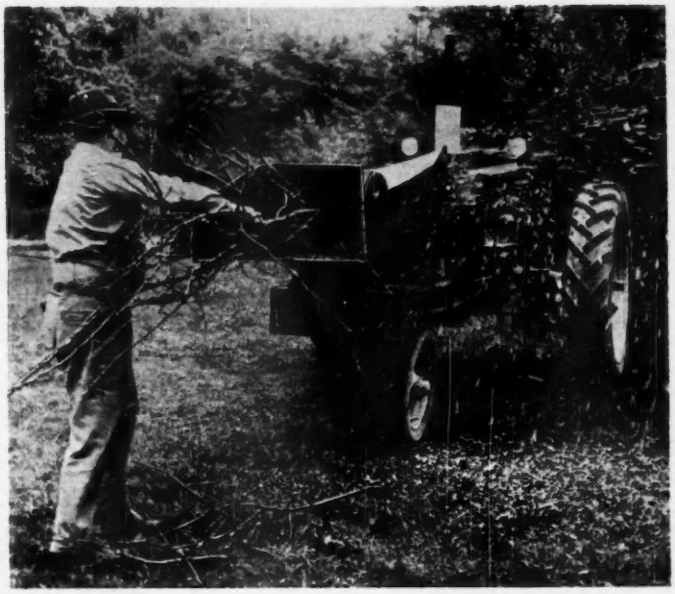
Dear Editor:

I find the compatibility chart in the February issue to be particularly useful, and as far as my knowledge of compatibility goes it seems to be quite accurate. There is one mixture, however, which you indicate to be safe that we have had some trouble with, and that is the mixture of Toxaphene with summer oil. While we were testing Toxaphene for the control of pear psylla, we by accident got some of it on a pear tree that was later sprayed with summer oil, and a considerable amount of foliage burn developed.

We, therefore, made a definite test, spraying pear foliage with Toxaphene followed by summer oil, and got the same injury again. This particular Toxaphene was a 50 per cent emulsible material, and it may be that injury would not occur with the dry material. We are planning to run further tests this summer to find out more about this possibility of injury. I do not know whether the injury would occur on anything but pear.

Yakima, Wash. E. J. Newcomer

Brush being fed into Asplundh Chipper. Note discharge and fine chips on ground at right of tractor.



At last,

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- Cuts cost of pruning disposal.
- Produces valuable chips for orchard mulch
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- Reduces fertilizer costs

The sturdy Asplundh Chipper gets rid of brush at a lower cost. Gathering, hauling, and burning are no longer necessary. Chips, as a by-product, are a priceless organic material in mulch form that will enrich and conserve your soil and increase production.

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The Chipper easily accommodates branches 2½ inches in diameter, rapidly providing vast quantities of chips.

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They add humus to soil . . . supply food for desirable micro-organisms . . . make soil spongier, adding to its moisture-holding capacity . . . let more oxygen get to plant roots . . . improve workability of soil . . . aid control of erosion.

Thus, an inexpensive method of obtaining a valuable by-product is derived.

Asplundh Brush-Chipper

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An Affiliate company of
THE ASPLUNDH TREE EXPERT COMPANY
501 York Road, Jenkintown, Pa.

For More Details, Mail the Coupon

Asplundh Chipper Co., 501 York Rd.
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I would like to have additional information about the Asplundh Brush-Chipper.

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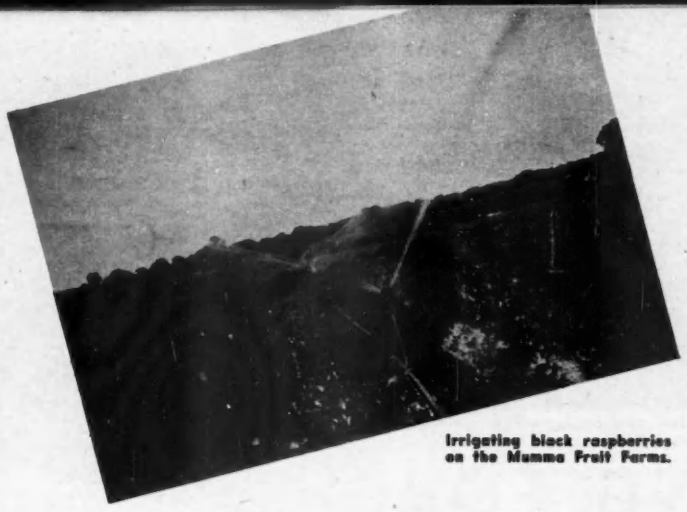


Irrigating black raspberries on the Mumma Fruit Farms.

WATER MAKES THE BERRIES

By ELDON S. BANTA

"DOES IT PAY to irrigate berries?" I asked Bernard W. Mumma and his father, Clyde S. Mumma, prominent fruit growers near Dayton, Ohio. "We have no checks on yield, no test blocks of any kind, nothing to go on—only 14 years of hard experience in irrigating berries. We know we have berries when other folks don't, and lots more of them when they do."

That's the way the Mummas tell of their successful experiences in irrigating over 100 acres of strawberries and raspberries.

The Mumma Fruit Farms, on the northwest edge of Dayton, have been big berry producers for a quarter of a century and were the first large users of irrigation in the area. They started in 1935, when berry prices, like others, were low, by pumping water on about 10 of their 40 acres of strawberries. They had such an increase in yield that they immediately planned to make it a regular practice whenever dry weather threatened the crop.

At present the farms include about 45 acres of strawberries and 75 acres of raspberries. In addition there are over 100 acres of apples and peaches, considerable acreages of grapes, pears, cherries, and vegetables, making a total acreage of about 600. I mention this to help clarify a point later.

"Water, plenty of it, and easy to get, that's the first essential in irrigating berries," said Bernard. "If you don't have an adequate supply of water close to your plantings, it will cost too much to apply it when needed most," he continued. On the Mumma farms the berry plantings are on second bottom lands next to a large river that supplies plenty of water even in the driest seasons.

Thirty acres can now be irrigated at one time. In fact, an inch of water can be laid down on the entire 30 acres in an hour, though that amount is seldom needed at one time. It takes big equipment to water in a big way as the Mummas do it. The larger of

(*Continued on page 32*)

The blackcaps are cultivated.

Irrigating peaches while in bloom, to prevent light frost damage.

A section of the well-cared-for Latham red raspberry planting.

Double-line 3-inch portable sprinkler pipe with sprinklers spaced 40 feet apart.

SPRINKLING FOR IRRIGATION

By F. J. VEIHMEYER, *University of California*

You will enjoy reading this article by Dr. Veihmeyer, one of our foremost irrigation engineers. He gives you practical facts about systems and equipment as well as cost figures.

IN HUMID REGIONS sprinkling is almost the only method used for irrigation, but in the arid and semi-arid part of the country only a small portion of the acreage is irrigated by this means. The availability of lightweight pipe which lessens the labor of moving the lines has increased the popularity of sprinkler systems.

In the last 50 years many have tried sprinkling, using it on all or a part of their farms to replace furrow or flooding methods. Sprinkling is expensive. Because of this and partly because of the broad claims sometimes made for sprinklers, it is easy for the grower to expect too much of sprinkler equipment.

Frequently claims are made that yields will be increased by sprinkling but in many cases this comparison is made between sprinkling and no irrigation. In individual cases the results may or may not equal the claims.

Sprinkling has a place but the grower will wish to satisfy himself on four main points before adopting this system.

1) Does my orchard have the kind of topography, soil, subsurface conditions, climate, and crops to make the use of sprinklers advisable?

2) What kind of sprinkler system do the conditions on my place call for, and how large must the system be?

3) What would such a system cost to install, maintain, and operate?

4) Would the advantages justify the increased cost over cheaper means of irrigation?

Sprinkling is only another method of applying water. Only after making cost comparisons with other methods and taking all the factors into account can the grower be sure that a sprinkler system will be a good investment.

Sprinkling has some definite advantages. It can be designed to use effectively a smaller flow of water than is desirable for most other methods.

On land with rough or irregular surfaces, sprinkling can eliminate the grading and leveling that would be required for surface irrigation. A sprinkling system may cost less than land preparations, although this might not always be the case. Sprinklers have an advantage on shallow soils, for here the removal of a few inches of surface soil by grading could be detrimental.

A greater uniformity can be obtained by sprinklers than by surface methods on lands not properly graded.

It is easier to adjust the rate of application of water with sprinklers for the needs of different soils, especially on pervious soils with sand or gravelly subsoils, to avoid excessive waste. Sprinkling may be a protection against erosion where orchards have been planted in straight rows up and down hillsides.

Sprinklers can eliminate many field ditches and so permit the planting of almost the entire acreage.

Where the annual water requirement is low, sprinkling may be an economic method of irrigation. Where little water is required in a year, sprinkling may cost less per acre than other methods of irrigation involving waste due to deep percolation.

Some crops need only a single light application which might be made more cheaply by sprinkling than by surface methods.

Sprinklers have their limitations. They do not give the uniformity of rain. They do their best work at prescribed pressures for which they are designed but below these their performance falls off.

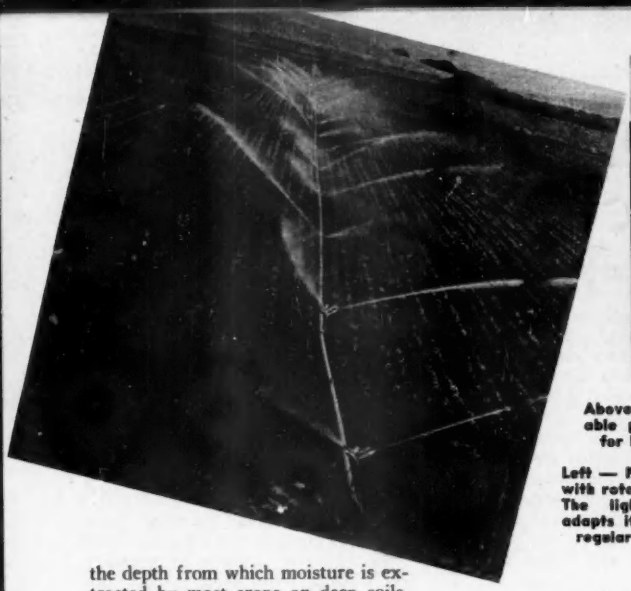
One claim often made for sprinkling is that it requires less water than either flooding or furrow irrigation. This is not always the case. While sprinkling can save water by preventing deep percolation, so can well designed and well operated surface application systems.

More water will be lost by evaporation with sprinklers than with other methods because during each sprinkling some of the spray itself evaporates, and also because the wetting of foliage as well as all of the soil exposes more surface water to evaporation.

Sprinkling can be made to do a good job almost anywhere, but it is not always advisable and it generally costs more. When fields are properly prepared for surface irrigation, and when one irrigator can manage fairly large streams the cost of application by surface methods will usually be less than that by sprinkling.

Another factor that limits the usefulness of sprinkler systems, besides their cost, is the slow rate at which some soils take water. Sprinklers often deliver water faster than the soil can take it, and if they are set at too low pressures they will throw out large drops that make things worse by tending to seal the soil surface.

From three to eight inches of water are usually required to wet dry soils to



Above, right — Portable perforated line for low pressure.

Left — Portable system with rotating sprinklers. The lightweight pipe adapts itself to the irregular land surface.

the depth from which moisture is extracted by most crops on deep soils, and under differing soil and crop conditions one to six inches or more might be applied at each irrigation. However, some soils take water so slowly that adequate applications by sprinkling are not feasible; only light ones can be made before the water puddles or runs off as waste.

It is important that the grower understands the water needs of every crop and every soil on his farm. A sprinkler system must be able to supply water at the rate desired and for as long and as often as the crops require. Of course, it will take more water at one time to supply the roots of fruit trees, which on deep soils may be active to a depth of 12 feet or more, than those of potatoes which draw most of their moisture from the top foot of soil. The quantity required will vary with the amount of readily available water the soil will hold.

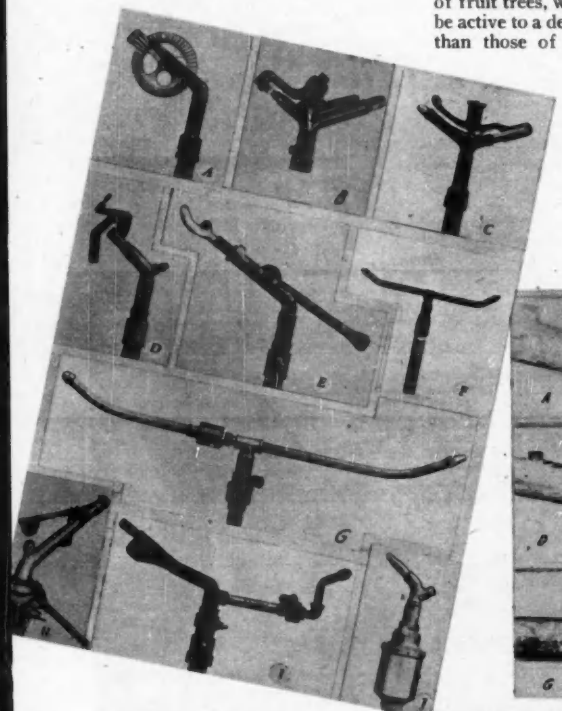
To put one inch of water on one acre takes a flow equal to 450 gallons a minute for one hour. From this the capacity needed by a sprinkler system that has to put a given depth of water on a given area in a given time can be figured.

In the West portable sprinkler systems are most numerous. Where large areas are to be covered rotating heads usually are used. These have capacities of one to more than 400 gallons per minute. Some of the larger ones are designed for pressures of 60 to 100 pounds per square inch and will cover areas up to about 375 feet in diameter. Some of the smaller ones will operate at 10 pounds or less.

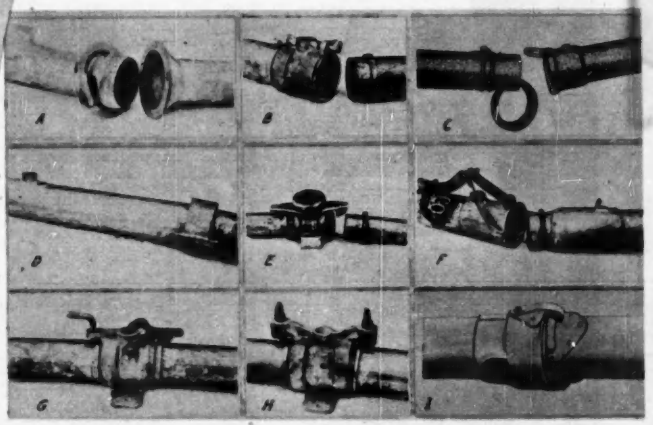
For supplemental irrigation where the annual water requirement is low, high pressures and large sprinklers may be more economical than small sprinklers because of the greater spacing of pipelines.

Nozzle lines are always more or less stationary. They are relatively

(*Continued on page 29*)



Some types of rotating sprinklers. A, B, C, D, and E, sprinklers with external driving mechanisms: A, spinning-wheel type; B and C, oscillating spring type; D and E, pendulum type. F, reaction-drive whirling sprinkler. G and I, reaction-drive with vibrator for slow rotation. H and J, internal-drive sprinklers: H, friction type; and J, gear type.



Some types of portable sprinkler-pipe couplings, with sprinkler outlets in or near the couplings. A, Shur-Rane, ball and socket type; B, Montague; C, Flex-O-Seal; D, Rain Storm; E, Pierce; F, Calco (4-inch); G, Wilson; H, Shur-Rane; I, Rainbow (for use with Volume gun).

TIMING
PEACH PRODUCTION PRACTICES

By W. W. ALDRICH

TO KEEP peach production costs at a minimum, each operation must be timed to give the most effective results. Such timing requires experience and an accurate knowledge of the interrelation of the factors influencing the volume and quality of the crop.

To visualize the interrelation of some of these important factors affecting quality of peaches in the Middle Atlantic States, we are using the diagram shown with this article. This diagram is based upon published research data and upon our experience in a large number of orchards.

The gradual development of Elberta fruit from full bloom to first picking is shown by a volume-increase curve. Instead of calendar dates, time is indicated as weeks from the first picking for long distance shipment.

The stage in Elberta development when the lower tip of the pit starts to harden is indicated by X. The period between this start of pit-hardening and the first picking for long distance shipment is usually about 11 weeks. The period may be longer in areas where fruits ripen during cool weather in late September. A nitrogen deficiency in the tree or a light crop shortens this period only slightly.

The length of the period between full bloom and the start of pit hardening varies, being shorter with very warm weather and longer with very cool weather.

Above the fruit growth curve are shown the periods during which some of the diseases and insects may threaten to reduce the quality of the crop. The proper timing of sprays necessary to completely control serious threats by all these diseases and insects is suggested at the top of the diagram.

The production of new shoots, upon which develop the blossom buds for the succeeding year's crop, and the development on these shoots of a large leaf area to size the current year's crop, generally require an annual application of a nitrogen fertilizer. These new shoots and their leaves make their most rapid growth soon after bloom, with this growth generally completed at the end of four to eight weeks.

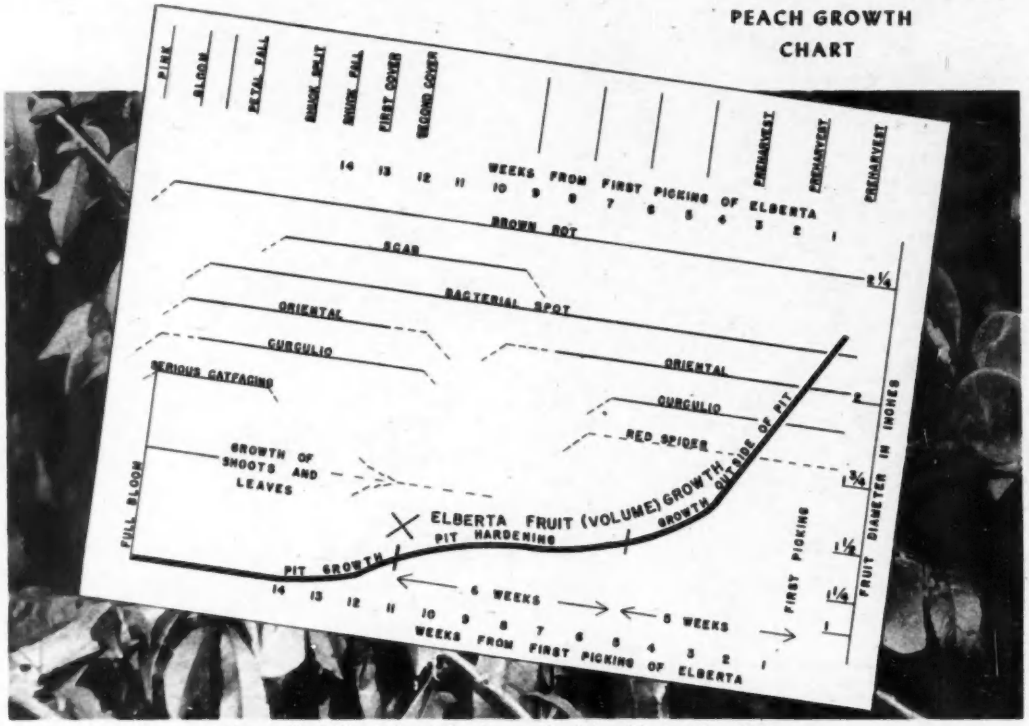
Knowing this, the grower can plan to apply a nitrogen fertilizer sufficiently early to stimulate the initial flush of new growth. Where a supplemental application of nitrogen is necessary on bearing trees after growth has started, a quickly available form of nitrogen should be applied not later than the shuck split stage.

After most of the shoot and leaf growth is completed, very little intake of nitrogen by the tree is necessary during the remainder of the season. In fact, a moderate nitrogen deficiency in the tree during pit hardening and during growth outside the pit ("final

(*Continued on page* 23)

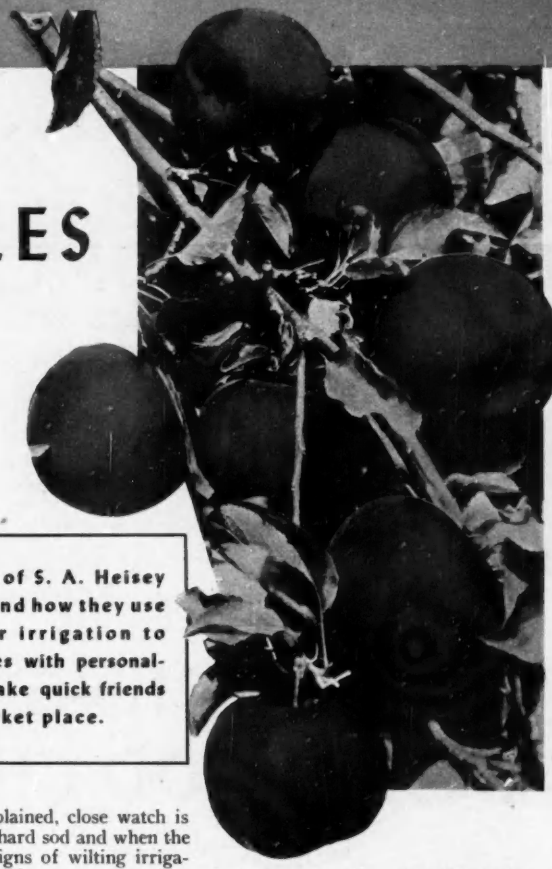
W. W. Aldrich is director of technical activities for the northeastern area of American Fruit Growers, Inc.

PEACH GROWTH CHART



Fruit growth of Elberta in relation to periods of threat by insects and diseases.

BIG JUICY APPLES



The story of S. A. Heisey and Sons and how they use sprinkler irrigation to grow apples with personality that make quick friends at the market place.

THE CLEAR WATER of the Conococheague Creek, which springs from the foothills of the Tuscarora Mountains in southeastern Pennsylvania, provides local anglers with fish and water power for electricity, and helps S. A. Heisey and Sons to size and finish as fine apples as are grown in the country.

For three generations the Heiseys have tilled the deep fertile soil on their farm between Mercersburg and Greencastle. But only since 1946 has the miracle of lightweight, quick-coupling, portable irrigation pipe made it possible for them to take one of the biggest gambles out of fruit growing by controlling moisture through supplemental irrigation.

The Heiseys are striving to grow the best fruit in the country, and that extra supply of water adds size, color, and finish to the fruit. Supplemental irrigation combined with concentrate spraying with non-caustic spray materials, heating for frost control, pneumatic pruning, sod culture, and other up-to-date practices give these Pennsylvania orchardists one of the finest of eastern apple packs and a production record more than four times that of the State average.

Each year for the past three years the Heiseys have applied 12 inches of water per acre to their 72-acre apple orchard. A rule of thumb is to start applying water if there has been no rain for three weeks. Also, as Son Henry explained, close watch is kept on the orchard sod and when the grasses show signs of wilting irrigation is started. They expect that during wet seasons it may not be necessary to add water, but hardly a season goes by without a dry period.

The Heiseys get their water from a flume just below the dam for the local electric power plant about one-half mile from the orchard. A permanent pump house shelters a 60 H.P. electric motor and a 1000-gallon-a-minute centrifugal pump. The pump pulls the water through a 10-inch pipe with a filter and foot valve at its end.

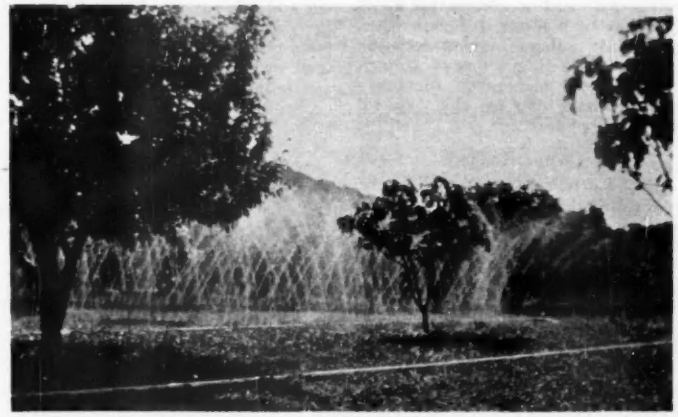
Extending 400 feet from the pump house is an underground eight-inch main line. A primer pump is not needed since the foot valve keeps water in the main line when the pump is shut-off.

From the eight-inch pipe, which is extended through the middle of the orchard, four four-inch sprinkler lines are attached, two in either direction, 40 feet apart. The four-inch pipes extend 1080 feet to the edge of the orchard. With this arrangement four acres are irrigated.

The Heiseys use what is commonly known as a low pressure irrigation system with perforated pipe. The actual irrigation is accomplished by running the water under low pressure (20 to 21 pounds) through four-inch quick-coupling steel pipe which has small holes about 18 inches apart through which the water sprinkles onto the orchard.

The usual practice for the Heiseys in the past has been to put on four inches of water at one time. This takes approximately eight hours and the pipes are then moved to the next location. Usually eight acres are com-

(*Continued on page 21*)



Portable pipeline with perforated holes, used with low pressure irrigation system.

Left—Portable wood chipper driven by the tractor power take-off in use in the orchard. Below—Uncovered soil after rain showing erosion which takes place. Note where pebbles give protection and soil has not been washed away.

S. C. S. photo

MULCHING WITH WOOD CHIPS

By A. C. McINTYRE

MULCHING is gaining in popularity. Research has established the values of mulch in orchard and berry patch. Cost and availability of acceptable mulch materials are the most important limiting factors to adoption of a mulch system of culture by many growers.

Why not use wood chips for mulch? Wood chips, of a size to meet the specific requirements of the orchardist, berry grower, or nurseryman, might be the ideal mulch material.

Sawdust has been successfully used as a mulch material. Some growers have hesitated to use it or give it a fair trial for fear of its acidifying effects. In decomposition there is a temporary mild acidity developed (less than occurs with peat moss) but it can easily be counteracted with a light application of lime. At the Rhode Island Agricultural Experiment Station the soil under a 6-inch sawdust mulch has, in seven years, become less acid. In the decomposition of sawdust (wood), as is the case with any cellulose material, nitrogen is used by the responsible soil organisms, thereby reducing amount available to growing plants. Experiments have well established the fact that the reduced growth of plants under a mulch is most often associated with nitrogen deficiencies. Annual applications of 6 to 7 pounds of a nitrogenous fertilizer, such as ammonium sulfate, per mature apple tree has been found adequate when a sawdust mulch 10 inches deep has been used. Using a heavy (6-inch or more) sawdust mulch, blueberry growers have doubled the yield on measured plots.

A. C. McIntyre is chief of the Forestry Division, Northeastern Region, Soil Conservation Service.

Wood Chips

Wood can be chipped to produce a cheap mulch material. A portable chipper is now in use that can move into the orchard and reduce prunings to chips which can be placed directly around the trees as mulch.

Limited orchard use of this chipper indicates that it can materially assist in reducing cost in disposal of prunings. In an apple orchard where no pruning had been done in several years, it was estimated that by chipping up the prunings, cost of their disposal was reduced by more than 50 per cent.

The wood chipper can be used to provide a wood fragment of varying sizes to meet particular needs. It can readily be drawn to the wood pile or if desired it can be set up alongside each fruit tree and pole wood, obtained from the woodlot, run through it with the chips blown into place to provide any desired thickness of mulch.

About two cords of 5-inch or smaller pole wood can be run through this machine in one hour. Two cords of pole wood will produce about 4 tons of chips. Cost per hour of machine operation, two men feeding, is estimated to be $4. Thus the chipping cost per ton of chips would be $1. One man can cut and pile two cords of pole wood per day. At $1 per hour for labor, piled pole wood would be worth $4 a cord or $2 a ton. To the machine and labor cost must be added costs of hauling poles or chips to the orchard. This cost should not exceed $4 per ton, probably much less. The total cost per ton of chips thus should not exceed $7 in the orchard or berry patch.

Straw Mulch Costs

About 300 pounds of straw per mature tree are often recommended for the initial mulching and 100 pounds per year, per tree, thereafter. If straw costs $16 a ton, the initial cost per tree would be about $2.40. For maintenance of 100 pounds a year the cost is 80 cents.

(*Continued on page* 36)

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NATIONWIDE FRUITS

APPLES

● Are you aware that there is a way to determine moisture conditions below the surface of your orchard soil which will give you advance warning of the need for water?

Simply by measuring the resistance at two wires leading to a buried two and one-half inch gypsum block it is possible to tell what the soil moisture conditions are down where the block is buried.

The blocks used in tests conducted by Wisconsin Experiment Station workers were patterned after those developed by Dr. Bouyoucos of Michigan State College and were made by imbedding two tinned wires 13/16-inch apart in plaster of Paris. These blocks, buried in the soil, pick up moisture and the moisture in them stays in balance with the moisture in the soil.

Insulated wires leading from these tinned wires or electrodes in the blocks to the surface of the soil permit the resistance of the blocks to be measured. When the moisture in the blocks decreases, the resistance to the flow of electricity through the block increases.

Many orchard soils, state the workers, should be irrigated when resistance rises to about 10,000 ohms. This will allow ample time to irrigate the entire orchard before any trees suffer from lack of available water.

It was found that resistance increased more rapidly in blocks placed half way from the edge of the branches to the trunk and nine to 24 inches below the surface of the soil, depending upon type of soil. This would indicate great root concentration in this area.

Only 15 to 20 blocks are necessary for a 10-acre orchard. These should be placed in areas of greatest root concentration.

About 50 per cent of the apples from the irrigated plots were U.S. No. 1, two and one-half inches and greater in diameter, compared with 11 per cent from non-irrigated trees in the test.

● High humidity in orchards is considered favorable for the spread of certain fungus diseases, including scab.

To determine whether the sprinkler method of irrigation in orchards has any influence on atmospheric humidity, Michigan Experiment Station agricultural engineers conducted an irrigation test in a mature apple orchard growing in heavy sod on gently rolling land. A portable pipe sprinkler system was used.

Any increase in humidity due to irrigation, they found, is confined within the approximate area covered by the sprinklers. The humidity in the irrigated zone returned to about normal in one hour. Within 45 minutes after irrigation the foliage on the trees was dry but some drops of water remained on the fruit.

CITRUS

● The effectiveness of 2,4-D as a weed killer is established. Now comes word that this toxic chemical, rather than causing injury to trees and fruit, actually increases the size of oranges and grapefruit.

Since 1946 the University of California Citrus Experiment Station has been making tests with 2,4-D on citrus. A single spray applied any time from several weeks before flowering and up until three to four months afterward was found to increase the fruit size of the coming year's crop.

Spraying with 2,4-D during this period not only increased fruit size but also lengthened the growing period, thus delaying maturity. The number of fruits was reduced due to increase in fruit size but total production was not lowered.

The effect of 2,4-D on fruit size was more pronounced on trees five to 10 years old than on older ones. No advantages were observed in spraying trees less than five years old.

CHERRIES

● Cherry growers who each year are plagued with the depredations of robins may wish to follow the method used by a New Zealand grower to rid his orchard of this cherry fancier. He frightened the birds by broadcasting the daily radio programs through amplifiers placed in his orchard. The possibility of the birds becoming accustomed to the same voice is of course offset by the change in programs. Sympathetic neighbors are a requirement. . . .

Or cherry growers may wish to follow the system employed by a Washington State grower whose "pet" method is illustrated below. . . .

Or they may find solace in the fact that the robin as well as other birds really performs some good deeds in the orchard. For example, five ounces of grubworms fed to a nestling robin by an experimenter were consumed in one day. On this basis if there were five nests of four fledglings each in a hundred acre orchard, the fledglings might consume over 185 pounds of worms and insects in a month.

Examination of the stomach contents of 109 yellow billed cuckoos collected from May to October revealed 1865 caterpillars, 93 beetles, 242 grasshoppers, 37 sawflies, 69 bugs, 6 flies, and 86 spiders. The stomachs of four chickadees contained 1028 cankerworms. The

Cherry thieves respect her!

stomachs of four others contained 600 eggs and 105 female moths of the cankerworm.

The food of the chickadee is 68 per cent animal matter, a large part of which includes destructive caterpillars and moths and their eggs.

The red-headed, downy, hairy, and red-bellied woodpeckers pursue wood-boring insect larvae on trees. The yellow-bellied sapsucker seems to be the only member of the woodpecker family that is known to kill young trees by ringing the tree with holes.

The members of the flycatcher family, including the phoebe, wood pewee, crested flycatcher, and kingbird, include insects in their diet to a great extent.

Three-fourths of the meadow-

(*Continued on page* 35)

State NEWS

• Big Thinning Job Forecast
• Organic Chemicals Gain in Favor

MAINE, *May 14*—There has been good blossom generally in orchards. Weather conditions have been favorable for pollination. Frost in lowlands May 12-13, with some orchards reporting 24°. Impossible to determine damage at this time.

Weather conditions have been much more favorable for spraying than during last two years.

Crop outlook based on present conditions indicates at least an average crop, and perhaps 10 per cent above.—*Rockwood Berry, Sec'y, Livermore Falls.*

NEW HAMPSHIRE, *May 14*—We have had very favorable weather for disease and insect control and for pollination. There have been only two or three possibilities for scab infection and the weather has been favorable for pollination for five to seven days in most orchards. Insect activity has been good and most growers arranged for sufficient honeybees to do a good job of pollinating.

At present it appears that New Hampshire should have its more than average one million bushels of good clean fruit in 1949. —*E. J. Rasmussen, Ext. Serv., Durham.*

VERMONT, *May 13*—Over the State as a whole tree vigor and blossom and pollen conditions have been more favorable than last year. However, temperature drops just prior to and during the blossom period in the southern half of the State have resulted in moderate to severe losses in a limited number of orchards. In some areas Delicious and Northern Spys have been hit much more severely than McIntosh. Artificial pollination was resorted to where pollen varieties were destroyed by freezes or where they failed to bloom concurrently with McIntosh.—*C. Lyman Calahan, Sec'y, Burlington.*

MASSACHUSETTS, *May 12*—Record high temperatures during the first week of May brought orchards into full bloom a week to 10 days ahead of normal. Two killing frosts the preceding week caused considerable damage in many orchards, particularly to Delicious and its red sports. Peaches suffered some injury but not enough to materially reduce the crop.

In spite of the frost injury, most orchards should have a good crop because of heavy bloom and very favorable weather for pollination.

Barring further frosts, some varieties should set heavy crops which will require thinning. Many growers are interested in the possibilities of thinning by applying naphthalene acetic acid as a spray two weeks after calyx.—*W. D. Weeks, Amherst.*

CONNECTICUT, *May 16*—Apples were in full bloom the week of May 1 and weather was exceptionally favorable for pollination. The unseasonably cold temperatures of March 20 and April 29 caused some reduction in fruit set.

At this early date apple, peach, and pear prospects appear to be slightly above 10-year average. Baldwin and Gravenstein seem to be light; other varieties average or above average.—*Arthur C. Bobb, Ext. Fruit Spec., Storrs.*

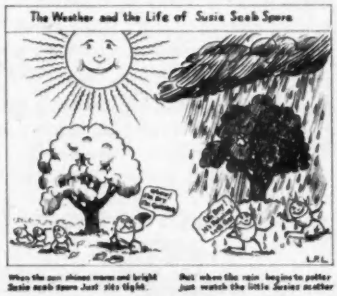
NEW YORK, *May 13*—All fruits blossomed heavily, with the exception of Baldwin apples in several areas. The freeze on April 25 did considerable damage to Cortland and McIntosh apple varieties for a mile south of Lake Ontario, depending on vigor and situation. This will cut the crop of Cortland and it may cut McIntosh to some extent in western New York.

Temperatures on May 10 in western and central New York and in some of the other areas dropped to 26°. Indications at present are that some areas five to 15 miles south of Lake Ontario were almost completely cleaned out of fruit.

Cherries were widely damaged in western New York by the April 25 freeze and were hit again on May 10. Sour cherries were damaged right down to the Lake Ontario shore; low spots more generally than high, although even well air-drained spots were cut as much as 95 per cent.—*D. M. Dalrymple, Sec'y, Lockport.*

NEW JERSEY, *May 16*—No appreciable change has taken place in the fruit crop prospect since the April 15 report. Average crop of apples and peaches is anticipated—apples two and one-half million bushels unless June drop is heavier than normal and peaches one and one-quarter million bushels. Fruit size and condition are good. Season is at least a week earlier than normal.—*Arthur J. Farley, Sec'y, New Brunswick.*

PENNSYLVANIA, *May 12*—Weather conditions following the extremely low temperatures on April 29 have been unusually favorable for foliage. Many apple orchards in low areas suffered severely from temperatures which dropped to 22°. Sour cherries have been reduced somewhat. Little or no injury has been reported for peaches.


The Weather and the Life of Susie Scab Spore
When the sun shines warm and bright Susie scab spore just sits tight.
But when the rain begins to patter just watch the little Susies scatter
L.P.L.

The University of New Hampshire uses this cartoon to effectively tell the story of the relationship of weather and scab.

COMING EVENTS

NATIONAL APPLE INSTITUTE annual meeting, June 16-18, at Michigan State College, East Lansing. Truman Nold, Sec'y, 726 Jackson Place, Washington 6, D. C.

POLLINATION AND BEE PASTURAGE CONFERENCE of the Honey and Pollen Plants Committee, American Beekeeping Federation, July 12-15, University of Washington, Seattle. Dr. A. M. Wairath, Local Arrangements Chairman, 509 Olive Way, Seattle 1, Wash.

INTERNATIONAL APPLE ASSOCIATION 55th annual convention, August 8-11, at Sherman Hotel, Chicago, Ill. A program for the ladies is planned. Samuel Fraser, Sec'y, 154 East Ave., Rochester 4, N. Y.

In talking with a number of growers the general opinion is that we should have a satisfactory crop in which some of the thinning labor usually performed has been reduced by recent freezes.

A fruit growing short course for orchard owners and operators will be held at Pennsylvania State College, July 11-16. Details are available from A. L. Beam, Pennsylvania State College, State College.—*J. U. Ruef, Sec'y, State College.*

DELAWARE, *May 16*—Fruit crop prospects are good. Peach set is heavy. Apples indicate a fair crop—early apples good, set of late apples spotty.

Oliver A. Newton, 87, widely known fruit grower of Bridgeville and an outstanding leader in the agricultural industries of the State, died recently.—*Robert F. Stephens, Sec'y, Newark.*

MARYLAND, *May 13*—It is still a little early to predict the size of the apple crop. There was an early bloom from heavy to light and in general the varieties that bore heavily last year are not coming back this year. Pollination weather did not last long. There has been considerable dropping but in general growers seem to feel we have a fairly good crop. So far scab, codling moth, and leaf roller are well under control.

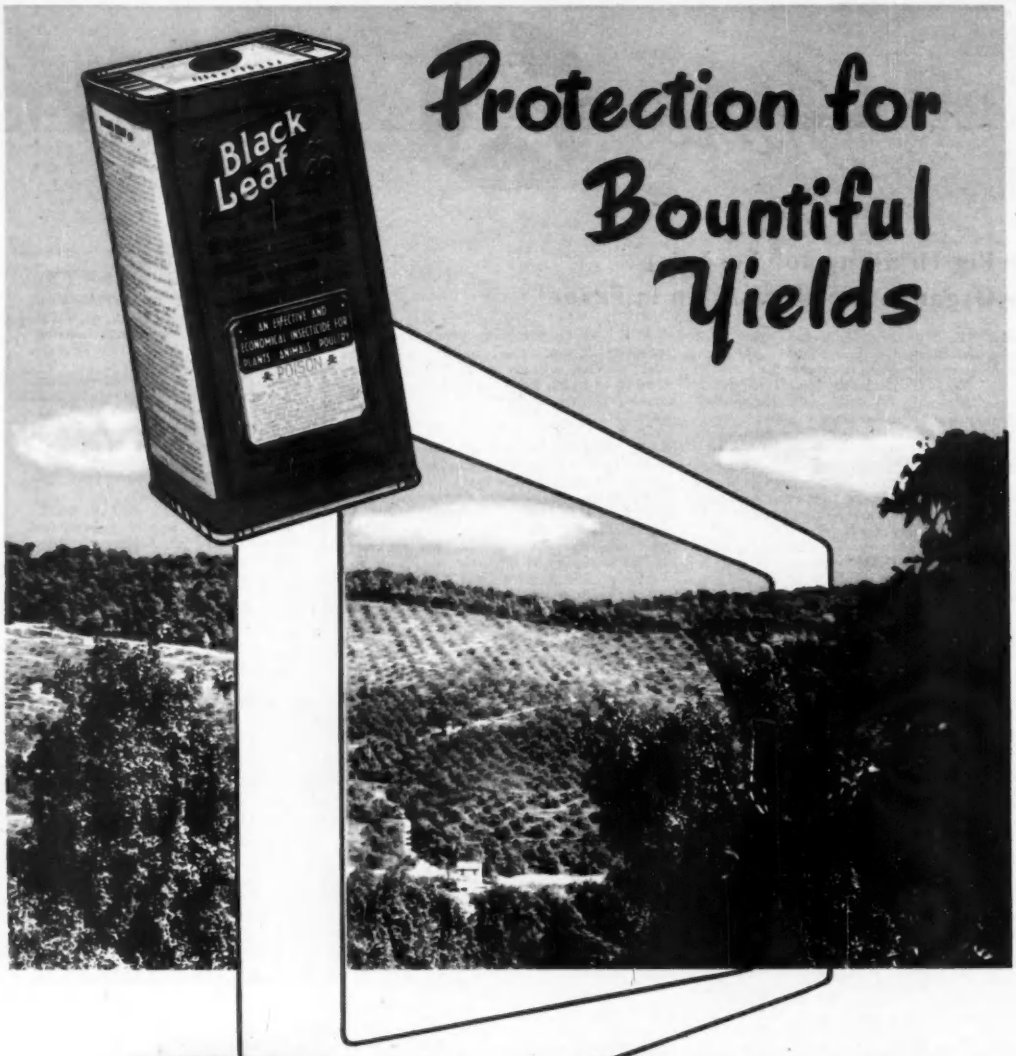
Peaches indicate a good crop, with good control of curculio and brown rot to date. Some orchards in low spots suffered injury from cold.—*A. F. Vierheller, Sec'y, College Park.*

VIRGINIA, *May 5*—The apple crop will be between 10 and 11 million bushels. Spring frost and freeze damage is showing up in many orchards by heavy drop of fruit. The 2,000,000 peach crop estimate made on April 15 still holds good.

Newton J. Wigginton, 79, orchardist and dealer in orchard supplies at Winchester, died recently.—*John F. Watson, Sec'y, Staunton.*

WEST VIRGINIA, *May 16*—Apples are

(*Continued on page 26*)



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LOOK FOR THE ON THE PACKAGE

GROWER EXPERIENCES IN LOCATING WATER

SURFACE WATER for irrigation is either a problem or it isn't. A river or stream, a lake or pond, quickly solves the water problem; but where no surface water is available, the ingenuity and resourcefulness of the grower are challenged. Maybe he will hire a diviner or dowser to help locate a subterranean stream, but chances are he will grasp a willow twig and proceed forth and await the divine inspiration which will lead him to water. Sometimes it does; but, in locating water, nothing equals the experience and judgment of a good well driller.

Arnold Ulrich of the Ulrich Fruit Farm, Rochester, Minn., was faced with just such a problem in locating water to irrigate strawberries and raspberries. Mr. Ulrich writes: "Water in our area is indeed a problem—there are no rivers or creeks nearby nor are there any lakes or ponds in this part of Minnesota. Neither can you drive sand points in our section. The only source of water is from deep wells.

"After losing many crops of berries by either drought or frost, we started drilling for water in 1935. We started out with a 12-inch hole and hit some water where we hit solid rock at about 160 feet. This water we cased out with a 10-inch casing and drilled further with an 8-inch hole. At about 350 feet more water was found, but the well driller said that it wouldn't stand continuous heavy pumping. At 510 feet we hit the real thing. The water rose to within 100 feet from the surface, more than 400 feet of water. This level can't be lowered at 200 g.p.m.

"At this time we installed a deep well, plunger-type pump with a a double acting cylinder. It delivers about 100 g.p.m. and gives plenty of pressure to operate 1200 feet of overhead irrigation line as far as ⅛ mile from the pump."

Abel de Rocher of Grand Junction, Mich., regularly irrigates 75 acres of apple orchard. Here is how he overcame his water problem: "We are fortunate in being able to irrigate from a good sized lake that is 2 miles long and 1 mile wide. Water is pumped from three cribs set at ¼ mile apart along the shore of the lake. These cribs are 4 feet square and 4 feet high, set to a depth of 3½ feet and screened with hardware screen of ¼-inch mesh on four sides. Located inside the crib is a 50-gallon drum with panels of ¼-inch screen, submerged to a 3-foot depth.

"We are using a portable pumping unit which consists of a 500-gallon to 600-gallon-per-minute centrifugal single stage pump mounted on the bell housing of the engine. The engine is a six-cylinder gasoline, with a horsepower rating of 117. Actual brake horsepower is 55. The water intake pipe to pump is 6 inches inside diameter. On the intake end of this pipe is mounted an intake pipe screen 14 inches in diameter and 6 inches vertical measurement. Holes in this screen are just large enough to keep foreign material out of suction line that will not pass through the openings in the closed impeller of the pump. Suction screen must be 2 feet or more below water level with this size of pump to prevent the forming of whirlpools, thereby taking in air.

"Fuel consumption with a pump pressure of 60 pounds is 3 to 4 gallons per hour. With a pump pressure of 80 to 90 pounds, fuel consumption is 4 to 5 gallons per hour. We are using 4-inch portable irrigation pipe throughout but would prefer 5-inch main lines with 4-inch laterals.

"When 8/32 x 7/32 nozzles are used in the standard sprinklers, at 25-pound pressure at the sprinklers, the sprinklers deliver 17 to 18 gallons per minute. We use 30 to 33 sprinklers in each irrigation. Spacing sprinklers 60 feet by 60 feet at 18 gallons-per-minute per sprinkler on a 4-hour run, we apply two acre inches of water. In especially dry seasons we irrigate every 10 to 12 days."

Major H. C. Moore of Gaffney, S.C., began to irrigate two blocks of Elberta peaches in 1947. Here is how he describes his water supply: "At one orchard there was a small stream running between two main bodies of trees, and, by building a combination fish pond and storage basin for water to irrigate, we had plenty of water. With another orchard a creek ran full length of the orchard, and we pump direct from the creek. Our pond stores about two million gallons of water. The dam was laid out and built by contractors and supervised by the Soil Conservation Service. The small stream runs the entire year. We have to raise the water about 100 feet. We pump 300 gallons per minute with a 4-inch intake and 3-inch outlet."

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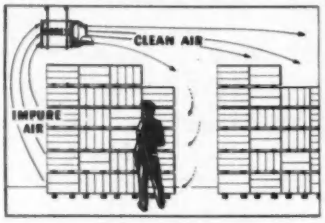

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MARKETING

PRICES

● Fruit prices have shown profitable increases this spring over last despite declines led by dairy products and truck crops in the general farm price level. Cash receipts from fruit marketings for January, February, and March were 25 million dollars higher than for the same period a year ago. Leader in the parade of price increases is Florida which as short a time as four months ago was faced with ruinously low prices. The freezes in Texas and California plus an unprecedented demand by frozen concentrate buyers have seesawed Valencia prices up to $4 to $5 f.o.b., the highest level in nearly 25 years.

Apple prices have also held strong through the spring marketing season. As with citrus, a short crop accounts for a good part of the difference between prices this season over last. Better packs and higher quality fruit also played their part in the more favorable price picture.

MICHIGAN CHERRY PRODUCTION

● Shortly over a year ago, the Michigan Cherry Commission opened offices at Lansing and began a vigorous promotion program to help move a record-breaking crop of red cherries. At the end of a year's operation, the Commission looked back upon a successful season which saw the large supply move steadily to market at good prices leaving both canned and frozen cherries in a strong position with the start of the new season.

The Commission collected one-tenth of one cent per pound by legislative act of 1947 on all cherries produced in Michigan when sold or shipped for processing by the grower or the grower's agent. The total amount collected was close to $106,000 of which $41,000 was used for national and State advertising programs. The balance of $60,000 provides a comfortable backlog to start the coming season.

The national program carried out by the National Red Cherry Institute, which was worked out in conjunction with growers from Michigan and other States, featured three campaigns which included the "Cherry Christmas" program, National Cherry Week at the time of Washington's birthday, and a March and April radio campaign over four Chicago stations.

Administrator of the Michigan program was acting secretary, Lawrence O'Neill of the Michigan Department of Agriculture. Concluding his first year's report, O'Neill said, "Cherries are more popular than ever before. The industry is fast becoming a leader in the State and when our friends from our sister states think of MICHIGAN, they think of CHERRIES."

TEXAS CITRUS LAW

● Ninety days after the adjournment of the Texas Legislature, the bill recently signed by Governor Beuford H. Jester, creating the Texas Citrus Commission, will go into effect. The legislation provides for a 27-man commission made up of 10 growers, eight shippers, six canners or processors, and three members at large representing residents of the citrus producing areas of Texas.

Some Texas growers view the bill with alarm since growers will foot the cost, and yet they represent less than half of the voting power of the 27 member commission. Objection has also been raised to the way the money will be spent. Proceeds from the tax will go into three separate funds, three-quarters to the Commission, one-eighth to the Texas A & M College citrus fund, and one-eighth to the Texas A & I citrus fund.

The Commission will have the authority to issue regulations establishing minimum grades and sizes of Texas citrus which may be placed in containers for transportation and sale as fresh fruit.

KNOUSE FOOD COOPERATIVE, INC.

● Three operating canneries with a total volume of 2.5 million bushels are now in the hands of Appalachian belt growers who subscribed stock subscriptions to raise money to purchase the canning facilities. Knouse Food Cooperative, Inc., is the name of the new cooperative which now takes its place as the largest cooperative canning enterprise for apples in the United States. It is reported that the three canning plants give growers control of 25 per cent of the processing industry in the Appalachian area.

BIG JUICY APPLES

(*Continued from page* 13)

pleted in a 24-hour day, although it would be possible to irrigate 12 acres. Eight to nine days are required to cover the 72-acre orchard.

The Heisey orchard always has been a heavy bearer. One McIntosh block yielded 1000 packed boxes per acre, and Mr. Heisoy figures his average to be near 650 packed boxes per acre. The one-bushel western-type box is used with a western wrap and count pack. Because of the generous yields the cost of irrigation per box of fruit is small, amounting to less than three and one-half cents per box for 12 inches of water.

Biggest single cost item is depreciation. Total cost of the system, including pump and pipe, was in the neighborhood of $7000 which, depreciated on a 10-year basis, is $700 per year. The power cost for 12 inches of water on four acres is $30 and the labor cost for moving the pipe is $16.20. Depreciation for four acres is $40, making the total cost of applying 12 inches of water on four acres $86.20 or $21.55 per acre.

Irrigation Information

There is no need to experiment with irrigation engineering. If you are planning to irrigate and need help, write to someone who knows. The Agricultural Engineering Department of your State Agricultural College and the manufacturers who offer their equipment on these pages stand ready and willing to help you. They have engineered successful irrigation projects and their advice is invaluable.

Is it worth the extra cost and trouble involved? The Heiseys, who are not satisfied with anything but the best, believe they are receiving three definite advantages from irrigation:

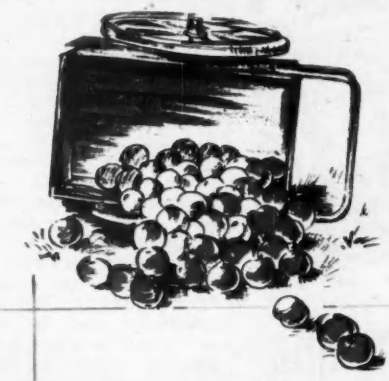
1) It helps eliminate the problem of small apples, since water gives the fruit added size. They figure they are getting apples one to two sizes larger since they began to irrigate.

2) Apples achieve a better finish under irrigation which means higher prices at the market.

3) Watered orchards yield fruit with a higher and brighter color especially if there is a dry period during the growing season.

Finally, the biggest gamble of all—the gamble of drought—is eliminated. As Henry Heisey puts it, "When you work an entire year on a crop and then let drought come along and whip you, it is hard to take."

Perfectionists in the art of growing fruit, the Heiseys have made irrigation a profitable practice in their successful orchard operation.



Keep summer insects from upsetting the apple cart

The weeks when fruit is developing is the heyday of fast-working insect pests. They're sly gremlins that need to be watched carefully and guarded against promptly. You can prevent them from cutting expensive capers in your orchard.

ORTHO compatible insecticides enable you to meet their attacks with quick-acting sprays as soon as they show themselves.

PERSISTO WETTABLE — This ORTHO DDT spray kills the larvae and young worms of the codling moth by contact. Its immediate and residual effect safely guards your prospect of a fine apple crop.

VAPOTONE XX SPRAY — Mites, red spider and aphids meet quick check to their mischief when "VAPOTONE XX" (20% tetraethyl pyrophosphate) hits them.

VAPOPHOS WETTABLE — This PARATHION spray is highly useful in apple, peach and pear orchards against mites, aphids, oriental peach moth and pear psylla.

ISOTOX WETTABLE — This insecticide, made with pure gamma isomer of hexachlorocyclohexane, is widely used against the attacks of late plum curculio.

PERSISTO, VAPOTONE, ISOTOX, ORTHO REG. U.S. PAT. OFF.

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Yes sir. Alcoa Cryolite is selective. It kills the harmful chewing insect pests, but saves beneficial insects that destroy aphids, red mites and leaf rollers.
Time-tested dependability tool
Use Alcoa Cryolite for a good kill.
Easy to spray or dust.

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CHEMICALS DIVISION

1737 Gulf Bldg., Pittsburgh 19, Pa.

Packed in 50-lb. bags, 6-lb. bags and handy 1-lb. shaker cans.

Alcoa Cryolite Insecticide

TAKING THE HOP OUT OF 'HOPPERS

GRASSHOPPERS have caused considerable damage in the last several years, and this season may again see widespread outbreaks, according to the U. S. Department of Agriculture. 'Hopper trouble is expected in a wide area from Illinois and Michigan to California, and Texas to Canada, although the weather may alter this prediction. Dry, hot weather favors their development, and cold, rainy weather helps to keep them in check.

After three years of extensive field tests, including one experiment covering 30,000 acres of grasshopper infested rangeland, the USDA recommends two insecticides—Toxaphene and Chlordane—which can be applied as emulsions, wettable powders, or dusts, from ground rigs or airplanes.

The rate of application recommended is 1 pound of technical Chlordane, or 1½ pounds of technical Toxaphene per acre when applying sprays. Use 1½ pounds of Chlordane or 2 pounds of Toxaphene per acre when applying dusts. Lower rates of application may be used against newly hatched 'hoppers in the spring under some circumstances, and slightly higher rates may be necessary to get good kills of mature 'hoppers late in the season.

The USDA recommends treating infestations of 'hoppers as they leave the eggs beds, before they move into the crops. They usually hatch from along roadsides, edges of fields, canal banks, areas of idle land, or sometimes in the fields themselves. The best control of grasshoppers is obtained by applying at the proper rate one of the recommended insecticides to the right place at the right time. Too little won't give effective kills, and too much may leave harmful residues.

At the University of Wisconsin experiments with a heavy infestation of grasshoppers on two-year-old cherry seedlings indicated that Chlordane gave excellent control. In mid-July the 'hoppers had stripped almost all the leaves from many of the seedlings in the orchard, and the workers found an average of about 20 grasshopper nymphs feeding on each seedling. Other 'hoppers were in evidence, but they jumped off the seedling before the counts could be made.

E. J. O'Neal and C. L. Fluke of the university used 2 quarts of 25 per cent Chlordane emulsion concentrate in 300 gallons of water and sprayed only the area around the seedlings to avoid a Chlordane resi-

(*Continued on page 37*)

sprinklers for portable pipe systems... *from the smallest to the largest*

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OTTAWA MFG. CO., 1-932 Garden St., Ottawa, Kan.

PEACH PRODUCTION

(*Continued from page* 12)

swell") is usually essential for the best fruit quality.

Such a moderate nitrogen deficiency favors the development of both the maximum amount of red color and that characteristic ground color which enables pickers to select fruit at a specific stage of maturity.

Cultivation

To obtain the maximum growth of young trees, the cultivation should be timed to prevent depletion of available nitrogen and moisture in the soil by any cover crop or weeds while new shoots and leaves are developing rapidly. This means thorough and frequent cultivation during the two months following bloom. In August and September, when the trees should be hardening for winter, cultivation should be omitted. Where weed growth is heavy in late summer, mowing may be necessary to prevent serious depletion of soil moisture.

With bearing trees, the uncertainty of rainfall frequently makes it difficult to determine the proper timing of cultivation. Where a soil moisture deficiency is likely to occur in the summer, and cover crops to replenish soil organic matter are grown in the spring, a light ("trashy") cultivation is usually necessary about the time the shucks fall. Thereafter the weeds must be kept under control to avoid a serious soil moisture deficiency during the "final swell."

In a wet season, however, the quality of the fruit can be reduced by excessive cultivation during the period extending from about 11 to about three weeks before picking. During this period an intake of nitrogen by the tree sufficient to reduce both red color and accuracy in picking can result from a thorough cultivation that liberates available nitrogen by decomposition of organic matter in a warm, moist soil.

Insect Control

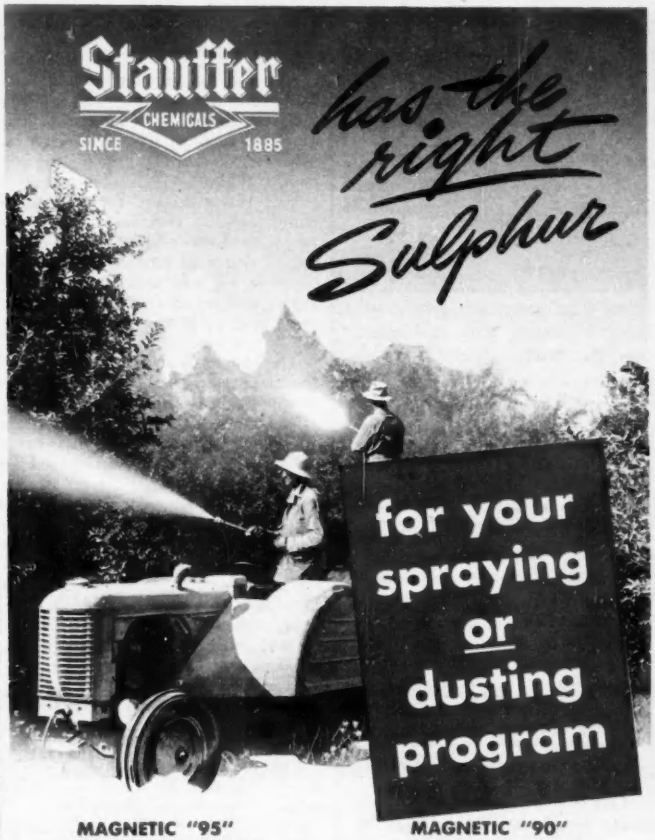
Upon the entomologist most familiar with a specific district rests the responsibility for determining the activity of beneficial insects, the periods of threat of potentially injurious insects, and the residual effect of available insecticides.

Then the grower must decide upon a timing of sprays that is properly related not only to the periods of insect threat but also to the periods of disease threat, to tree growth, and to the time of fruit maturity.

Only six insect threats are indicated in the diagram, and the periods of threat are based on the usual insect behavior in one area.

Since the tarnished plant bug, one

(*Continued on page* 24)



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Our finest dry-wettable sulphur for use in early cover sprays on apple, peach and cherry. Try it as the dust in your new sprayer-duster. It wets—It sticks—It protects.

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CROWN BRAND WETTABLE SULPHUR

A 325-mesh dry-wettable sulphur. Your best choice for use in pre-ripening sprays on peach and in late cover sprays on apple. Safe – Effective – Economical.

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Stauffer Fungicide 341-C for apple scab. An oil-compatible fungicide

DDT
Stauffer DDT 50% Wettable & Dust Concentrates

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PEACH PRODUCTION

(Continued from page 23)

of the insects causing serious "catfacing," is active during and immediately following bloom, control will require the application of an effective insecticide, such as DDT, while the petals are falling.

The threat to the fruit by overwintering plum curculio adults begins while the shoots and leaves are growing. Control of curculio by the application of lead arsenate and lime during this period will tend to restrict shoot length and leaf size, particularly where tree vigor is low.

The danger of severe tree injury by residual arsenic makes it desirable to apply at least one spray containing a "safener," such as zinc sulfate and lime, within a week or 10 days after the last of the early lead arsenate-lime applications.

If benzene hexachloride (BHC) is used, the prevention of off-flavor in the fruit at harvest will require that another insecticide be substituted in applications that are too close to picking. Thus, if a variety ripening three weeks earlier than Elberta should have 10 weeks between the last BHC application and harvest, the last use of BHC should not be later than the thirteenth week before the first picking, or not later than the shuck fall stage.

The timing of insecticide applications for a summer brood of curculio or for the second and third broods of Oriental fruit moth is frequently based on the number of weeks before picking. Successful as this may be in many cases, it frequently permits sufficient skin punctures by worm feeding or entry to seriously increase brown rot infections.

Therefore, to improve brown rot control, the timing of sprays for the beginning of curculio or Oriental fruit moth threats in the summer is safer when based on insect activity rather than on fruit development.

A large population of mites, such as red spider, on the leaves during the summer can greatly reduce the efficiency of leaves in carbohydrate production. Where a heavy crop requires maximum leaf efficiency to satisfactorily size the fruit, sprays to control the mites should be applied before their feeding has reduced the fruit growth rate.

Disease Control

As indicated in the diagram, the thread of brown rot extends throughout the period of fruit development. Infection by germinating spores of this disease may occur through the open blossoms, through skin punctures in the green fruit caused by insects or hail, and, shortly before picking, even through hair sockets of the uninjured fruit.

A protective fungicide, such as a sulfur paste, to prevent blossom infections and twig cankers resulting from blossom infections should be applied as the blossoms are opening, with repeat applications as often as practical so long as additional blossoms open.

During the period from petal fall to about three weeks before picking the principal control measures consist in eliminating insects that puncture the skin. Since some skin punctures are inevitably caused by hail or by the few insects that survive even the best spray program, sulfur is also included in all insecticide sprays.

The inclusion of sulfur in sprays applied as soon as the fruit becomes exposed by splitting of the shuck and in those applied during the following six weeks also protects the fruit against blemish by the fungus causing peach scab.

The period of greatest susceptibility to brown rot occurs when the fruit begins to ripen. At this time the application of preharvest sulfur sprays should be supplemented with the prompt removal from the orchard of both softening and infected fruits.

HANDY ANDY

Saving labor and cutting down on bruises are accomplished with a double-decked tractor-drawn trailer used by Fred Cann, operator of the Pitman Farms, New Boston, N. H. One man can do the loading and unloading, and the boxes don't have to be leveled since it is not necessary to stack them. Thus many bruises are prevented which occur with stacked boxes which are not carefully leveled off, and fewer boxes are required in the picking operation. The apples are taken off the trailer and dumped directly onto the grading and sorting machine, eliminating another handling operation in the packing house. Seventy boxes can be hauled at a time, and two trailers keep a steady supply of apples on the way to the grader. The outer two feet of the upper deck are hinged so that the upper section can be turned back while loading the lower deck.—E. J. Rasmussen.

If you have been making use of a device of your invention which saves time, labor, or expense, send in a photograph and tell us how it works. AMERICAN FRUIT GROWER will be glad to pay $5.00, on publication, for such items.

The cost of collecting these softening fruits is more than covered by their retail sales value. Burial each day of infected fruits reduces the chances of spores reaching the clean fruits.

The bacteria causing the bacterial spot disease ooze out of diseased twigs and are carried by rain and dewdrops to new shoots, leaves, and fruits. The fruit is susceptible as soon as it is exposed by splitting of the shuck, and remains susceptible until harvest.

Control of bacterial spot is based upon the frequent application of zinc sulfate and lime, beginning at or soon after petal fall. Usually the zinc sulfate and lime are included in the postbloom sprays for insects and other diseases; but if the interval between those sprays is too great, special sprays with the bactericide may be necessary. When new shoot and leaf growth has stopped, the later sprays may be at longer intervals.

Fruit Thinning

The long growth period and the slow rate of growth during pit hardening of Elberta and other varieties ripening about the same time or later permits a long period in which to complete thinning.

Where the set is heavy, or a large number of trees is involved, it is frequently desirable to start the thinning as soon as yellow color or small size indicates those fruits that will drop anyway. Otherwise, the thinning should be started about the time the pits begin to harden and be completed soon after the pits are too hard to cut with a knife.

With midseason varieties that set and hold heavy crops, the thinning should be completed within three or four weeks after shuck fall. With very early varieties, the largest yield of marketable fruit is usually obtained by thinning as early as practicable. Where the blossoms can be thinned by mechanical or chemical means and the hazard of cold damage is not serious, a moderate blossom-thinning followed six or seven weeks later by the necessary hand thinning would be ideal.

Picking and Packing

Because picking and packing involve extensive preparations for labor, materials, transportation, and marketing, predicting the approximate date for the start of picking and packing can be of great value. Knowing the date of the start of pit-hardening in a specific block and considering 11 weeks to be the additional time required for Elberta to reach proper maturity for long distance shipment, we have during the last three years in the Middle Atlantic States been able to predict within three or four days the proper time to start picking Elberta in that block.

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Most of your troubles are caused by deficiency in food elements. You can't correct this by insecticides or fungicides. Get smart—use a balanced ration . . .

RA-PID-GRO

The Original, Nitrogen-Derived-from-Urea Complete Foliage Plant Food

Don't expect fruit in quantity or quality from a one-chemical diet. RA-PID-GRO, the complete plant food, enters the sap stream immediately through the leaves —and almost as quickly when fed at the base.

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Spray RA-PID-GRO along with insecticides. It is instantly soluble, is compatible with most insecticides and fungicides, and will not damage your spray machines.

Results will amaze you—better flavor, more color, larger fruit. It will save you money and labor.

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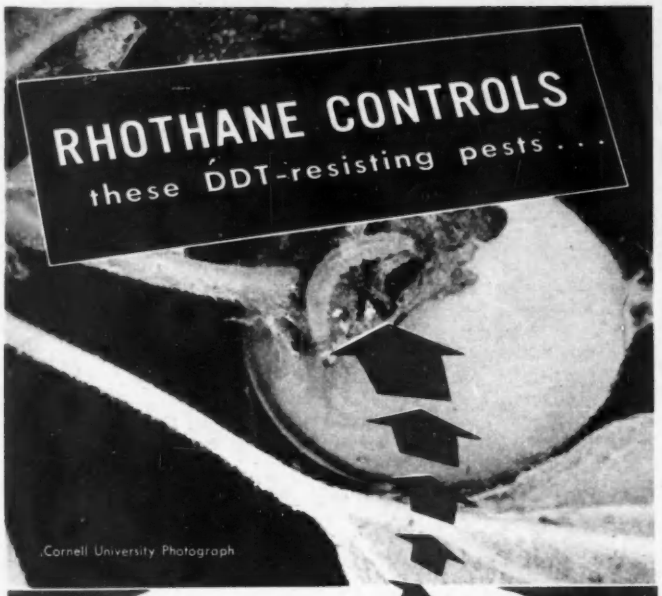

RED-BANDED LEAF ROLLER

. . . is a threat to apple orchards from Missouri to Maine, but you can now control this fellow!

Outstanding in a score of official tests, RHOTHANE was equally effective in commercial use in heavily infested orchards in the Shenandoah Valley in 1948.

Many states recommend RHOTHANE. You will want to use it if you are in a leaf-roller area.

ORANGE TORTRIX (SKIN WORM)

. . . is a bad actor in the cane fruit fields of the North West and in the apple, pear and prune orchards of California.

While DDT has little effect on this pest, RHOTHANE has given excellent control. Consult your local farm adviser for the program for your area.

BUD MOTH . . . is another well-known pest in the prune orchards of the Santa Clara Valley. RHOTHANE destroys the larvae at all stages of development.

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STATE NEWS

(*Continued from page* 17)

dropping heavier than normal for the June drop. Present outlook is for a crop that will be reduced to average or below. Peaches still look good. Cherries promise better than average crops.—*H. W. Prettyman, Ext. Hort., Martinsburg.*

SOUTH CAROLINA—A peach crop approximately 25 per cent of the original February estimate of 6½ million bushels is expected. Severe freezes on March 16, 18, and 19, and a heavy frost on April 17 resulted in the tremendous reduction.

An unusually heavy attack of black aphids has hit the peach trees throughout the State. Parathion has proven the most effective of any treatment thus far.

Curculio doesn't seem to be the problem that it has been the past few years. Far more growers than anticipated have turned to the use of Parathion for curculio control. —*Roy J. Ferree, Ext. Hort., Clemson.*

GEORGIA, *May 16*—Due to the Easter morning freeze and the trees not growing normally following the exceedingly mild winter, there has been considerable drop of peaches through the middle Georgia section. The crop estimate has been revised downward to about 35 per cent of a normal crop for the entire Georgia peach area. In the immediate vicinity of Fort Valley there probably will be 30 to 40 per cent of the average Elberta crop and about half a crop of Hiley. Undoubtedly there will be considerable loss of trees due to the severe delayed foliation south of Fort Valley.

Growers using organic insecticides are not experiencing great difficulty in plum curculio control; others following the standard arsenate of lead program are having trouble in effecting control. Next year will probably show a high percentage change-over to organic insecticides.—*Earl F. Savage, Georgia Exp. Station, Experiment.*

FLORIDA—Twenty-one directors—three from each of seven districts—comprise the board of the new Florida Citrus Mutual. The president is A. V. Saurman of Clearwater. More than 5000 growers, representing about 80 per cent of the citrus production in the State, have signed contracts supporting the co-op. Purpose of the Mutual is to work out and maintain a system of orderly marketing that will result in growers obtaining reasonable profits from their fruit.—*Clyde Beale, Assoc. Ext. Edr., Gainesville.*

OHIO, *May 14*—Unusually heavy bloom occurred in all commercial apple, peach, and cherry orchards. Confirmed biennial croppers such as Baldwin and Golden Delicious which were light last year had a heavy bloom.

A thinning problem is coming up in many apple and peach orchards. Prospects for a heavy apple crop are the best in 10 years. Some frost injury to Delicious and Stayman in low lying orchards in southern Ohio has been reported. Weather has been good for scab control spraying.

Prospects in mid-May were for as many or more peaches than in 1948. Both sweet and sour cherries have been badly damaged.—*C. W. Ellenwood, Sec'y, Wooster.*

MICHIGAN, *May 5*—Fruit prospects at blossom time appeared very good. A sudden drop in temperature following a warm period in March reduced peach buds approximately 75 per cent in southern Michigan; however, because of favorable weather during blossoming, litile to no crop reduction is indicated.

Red cherry blossoms were injured in southwestern Michigan by low temperatures on April 24, when buds were in the post-dormant stage. Sweet cherry blossoms were not injured appreciably.

Apple and pear trees throughout the State were loaded with blossoms and conditions for pollination were excellent.

Biggest crop loss from frost is in strawberries, which were cut 75 per cent. Michigan usually ranks among the first five States in strawberry production in the nation.

The annual cherry festival will be held in the Grand Traverse area during the first week of July.

Karl Bailey, former county agent of Pontiac County, and Lyle Tompkins, former county agent of Oceana County, recently accepted positions of district horticultural agents, Mr. Bailey in southeastern Michigan and Mr. Tompkins in the west-central area.—*A. E. Mitchell, East Lansing.*

ILLINOIS, *May 14*—Strawberry harvest is well under way in the Anna district and will begin next week in the Centralia area. Quality is good. Chlordane-DDT dusts have paid off in controlling tarnished plant bug and weevils.

Peaches still are a full crop in most orchards and most growers will have to thin heavily. BHC and Chlordane are being used widely with good results. Orchards sprayed with BHC or Chlordane last year show much lighter carryover of curculio.

Generally, a heavy crop is in prospect for apples, with the exception of Winesap and Delicious in southern counties. Many orchards will need heavy thinning.—*James N. Cummings, Sec'y, Dix.*

MINNESOTA, *May 12*—Conditions continue very favorable for all fruits. Pollination conditions for apples and plums were the best for several years, with excellent weather for the bees. There is some winter injury to strawberries, probably resulting from a heavy rain in January followed quickly by freezing conditions that did not allow mulches to dry out.—*J. D. Winter, Sec'y, Mound.*

IOWA, *May 9*—Fruit prospects continue good, with many growers reporting snowball bloom. To date the two main conditions which could have a tendency to lower the prospects are: 1) Several days of temperatures in the high 80's with drying winds in late April which shortened the bloom period; and 2) scarcity of honeybees for pollination. If anything prospects are a little better than our report a month ago.—*W. H. Collins, Sec'y, Des Moines.*

MISSOURI—An Orchard of Tomorrow Day is planned for November 11 at the Bell Orchards in Boonville. A 30-acre field will be planned and planted according to the best methods developed to date. The meeting is being sponsored by the Agricultural Extension Service, Missouri State Horticultural Society, the soil conservation contractors, and manufacturers of orchard equipment and supplies.—*W. R. Martin, Jr., Sec'y, Columbia.*

KANSAS—W. R. Flanders, a trustee and life member of the Kansas State Horticultural Society, died recently. During his many years as a member of the house of representatives, he used his influence in furthering the advancement of horticulture in Kansas.—*George W. Kinkead, Sec'y, Topeka.*

KENTUCKY, *May 16*—Good crop prospects are in evidence for both apples and peaches. April freezes caused heavy losses in strawberries.—*W. W. Magill, Sec'y, Lexington.*

(*Continued on page* 28)

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CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network

STATE NEWS

(*Continued from page 27*)

ARKANSAS, *May 14*—The peak of the strawberry harvest occurred the week of May 9. Total production should run 30 to 40 per cent above 1948. Prices have held up well.

The Boysenberry and Youngberry crop promises to be the best in the history of this crop in Arkansas.

The May drop on peaches was early and rather heavy. Bacterial spot infection is slight. Heavy infestations of curculio have been brought under fairly satisfactory control. Peach growers are anticipating a good crop of high quality.

A good apple crop is expected.—*Earl J. Allen, Sec'y, Fayetteville.*

MONTANA, *May 9*—Sweet cherry trees are in full bloom and prospects are for a very large crop and no frost damage as yet. Apple trees will be in full bloom the end of this week and prospects are very good for a bumper crop.—*R. O. Young, Sec'y, Missoula.*

WASHINGTON, *May 13*—There have been a few frosts but for the most part these have caused no serious damage. There appears to have been a little damage to Bartlett pears in some of the Yakima areas but this may be beneficial because of its thinning effect.

Frosts generally have not caused serious losses to apples in the State as a whole.

Stone fruits generally look good. I don't know when I have seen heavier crops of apricots in some areas. It will take good thinning to develop proper size. Peaches and cherries both look good.

Last year we were concerned with apple scab in some sections where we normally are not bothered with it. In the Spokane area, for example, some orchards suffered major losses. The dry weather we have had up to now seems to alleviate a scab threat. We will know more about this in three or four weeks from now.—*John C. Snyder, Sec'y, Pullman.*

CALIFORNIA, *May 14*—Heavy deciduous fruit crops are expected throughout the State. The only exception is in apricots which seem to be light but not as light as last year when the State had only half a crop. Peaches and pears are very heavy. Grapes are only slightly less than last year. All other fruit crops except grapes and apricots and prunes are very heavy. Prunes seem to be about the same size crop as in recent years although somewhat heavier in the Sacramento Valley.—*Grant Merrill, Red Bluff*

May 1 USDA report on citrus—Most citrus trees have made a satisfactory recovery from the winter freezes. A full set of fruit is expected on nearly all oranges and grapefruit trees. Lemon trees are slower in recovering from the freeze damage and the 1949-50 crop probably will be short.

TEXAS—The citrus crops in Texas for 1949-50 even with favorable growing conditions the balance of the season will be very short, according to the May 1 USDA report. Recovery from the severe January freeze has been slow and complete recovery is not expected for at least three years. Trees in many groves have been removed and more are expected to go this summer.

Damage was greatest to young trees owing to the active state of growth at the time of the freeze. Since practically all of these young trees were either red blush grapefruit or Valencia oranges the production of these fruits will be extremely short for a number of years.

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MAKES YOUR FRUIT PICKING JOB SO EASY!
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● The Wenatchee Fruit Picking Bag has an endless steel frame to keep bag open for easy access. For tender fruits it adjusts to half-bushel capacity and opens to full bushel size as needed. Empties from the bottom with "E-Z OFF" snap. Fits body comfortably, has wide adjustable web suspenders and is reinforced with leather at points of wear.

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SPRINKLER IRRIGATION

(*Continued from page* 11)

expensive and thus are generally used only for crops yielding a high gross return.

Lightweight portable pipe with holes so spaced in its sides as to expel water at various angles has come into use for low growing crops. This pipe is available to apply water at the rate of one inch per hour and at about two inches. It distributes water fairly uniformly in a strip along the line which varies with the pressure from about 50 feet at 20 pounds per square inch to about 20 feet at pressures as low as four to five pounds.

WATER LAWS

Laws pertaining to water rights for irrigation vary from State to State. Some States have no laws regarding the appropriation of water for irrigation while others require permits and have specific provisions for the use of ground or surface water or both.

The Mexican-developed doctrine of appropriation is widely used in the formation of laws by western States whereas in the East the basis for law is either the ancient English law of Riparian rights or the American principle of reasonable use. For detailed information regarding water rights in your State, contact your State Engineer, the agricultural engineering staff of your State college, or the Soil Conservation Service, U. S. Dept. of Agriculture.

The relatively high rates of application require frequent moves of the pipe and make these sprinklers suitable on pervious soils. Since it is not possible to regulate and equalize the pressure along the line as with sprinkler heads, it is essential to lay the pipe along the contour.

Portable systems by which most of the mechanical equipment can be readily moved consist of the pumping plant plus a sprinkler line of special lightweight pipe to which the sprinklers are attached. The pipe has quick couplings and comes in lengths of 20 feet. Other lengths are furnished on special order. The sprinklers are usually spaced 20, 40, or 60 feet apart.

Under-tree sprinklers have become popular in some areas. They consist of small low capacity sprinklers mounted on short risers that are located in the areas between adjacent trees. They are spaced the same distance apart as the trees so that each sprinkler covers an area equal to that occupied by one tree.

Annual Cost

After learning the initial cost—the investment in equipment and installation—the grower will wish to estimate the total annual cost of sprinkling.

(*Continued on page* 35)

Corona Products

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MICRONIZED SULFURS

(Wettable and Dusting)

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(Micronized wettable powder containing 50% DDT)

3% DDT DUST

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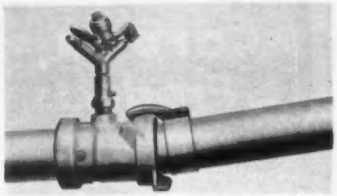

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LIGHT WEIGHT PIPE

QUICKLY CONNECTED COUPLINGS

Here is the *dependable* and *low cost* way to irrigate crops. Use an OK CHAMPION movable Irrigation System. Easily water all or any part of your fields by taking water from well, lake or stream. Improved quickly connecting, flexible couplings and light weight pipe. STEEL or ALUMINUM. Two men can easily move and reconnect ¼ mile pipe in thirty minutes.

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Quick, handy, economical! Cushman serves suppose, gets up to 60 miles per gallon.
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Tualatin Quick bearing Trees name Oregon
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BULBS. ROSES.. VINES
ORNAMENTAL TREES & SHRUBS
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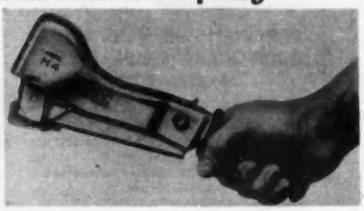
TUALATIN VALLEY NURSERIES
OVER 50 YRS OF GROWING P.O. BOX 310 SHERWOOD OREGON.

NEW FOR YOU

Automatic Stapling



Just in time for the coming harvesting season is this automatic hammer which makes easy the building and repairing of apple crates. The H4 Heavy Duty Self-Feeding Hammer drives a ¾-inch staple with a single blow and can also be adapted for fencing and shingling. Manufacturers of staples and stapling machines for a number of years, Bostitch is now entering the farm equipment field with a selected group of hand tools, descriptive material for which will be sent on request to Department FP, Bostitch, Westerly, R. I.

A Lift to the Orchardist

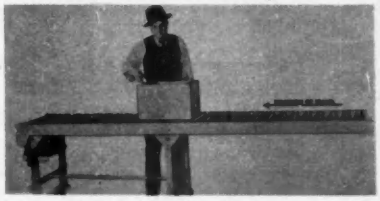
Giving the orchardist a lift and helping him to speed up work and cut costs is accomplished with the Orchard Lift, a new attachment for any tractor. It partially eliminates ladders from the orchard and can be used for trimming, thinning, and harvesting. Write Field Force Mfg. Co., 2nd Ave. & White Horse Road, Phoenixville, Pa., for the details.

Mowing the Orchard

An important job in orchard management is keeping the weeds and grass cut around the trees; the portable Jari power scythe is made just for this purpose. Lightweight and self-propelled, it is easy to operate and will cut right up to the trees. Complete information is available from Jari Products, Inc., 2934-D Pillsbury Ave., Minneapolis 8, Minn.

- SAFETY-TYPE CONVEYOR
- JARI POWER SCYTHE
- THREE-ACRE IRRIGATION

Safety in Handling

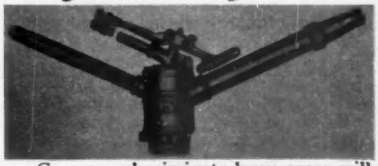


Further safety for the grower using material handling equipment is provided in the Standard new safety-type live-roller conveyor. The elimination of a belt running below the carrying roller does away with the possibility of the operator getting his hand between the roller and the belt. Bulletin No. 220 gives complete information and is free on request from the Standard Conveyor Co., North St. Paul 9, Minn.

Harvesting Made Easy

Another new development designed to speed up harvesting is the Wheel Ladder. Self-supporting, lightweight, and easily moved, Wheel Ladder can be adjusted to fit any shape tree and can be adjusted for uneven ground. For more information about this revolutionary harvesting aid, write to Rieser Wheel Ladder Co., Harpster, Ohio.

Large Area Irrigation



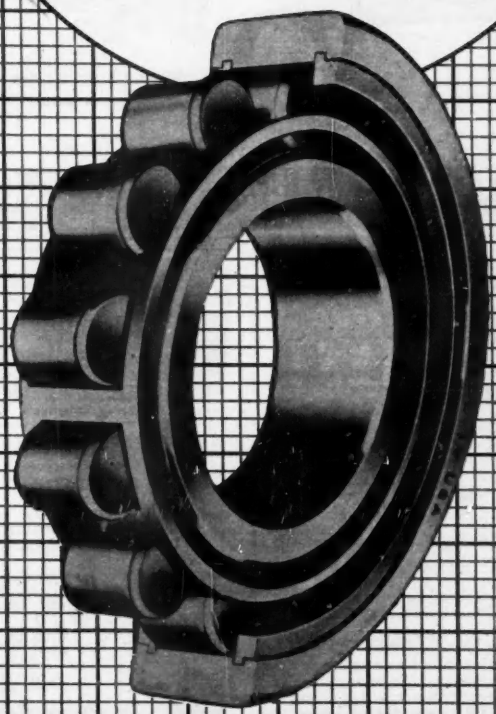
Growers who irrigate large areas will be interested in the Skinner large area and large volume sprinklers. These are grower tested and give a uniform coverage of approximately three acres. Write to The Skinner Irrigation Co., Troy, Ohio, for Circular No. 449.

INSIDE INFORMATION

WHEN you buy a tractor, truck, spray pump or other orchard equipment, you want information on what's inside—particularly what grade of bearings protect gears, shafts and wheels.

Fortunate for you, many leading manufacturers design in Hyatt Roller Bearings at important positions to assure smoother operation—longer life and economy in fuel and lubricants.

When your dealer says "Hyatt Roller Bearings" you get top quality – proved in case after case for nearly fifty years. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



HYATT ROLLER BEARINGS

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Writes B. W. Mumma:

May 19, 1949

Chicago Metal Mfg. Co.
Chicago 32, Ill.

I use Flex-O-Seal Pipe exclusively in my irrigation system and have found it very satisfactory. The coupling is the easiest and quickest to assemble and I can obtain a more flexible curve than with any other pipe.

***(Signed)* B. W. Mumma**
Mumma Fruit Farms
Dayton, Ohio

Write for descriptive literature in colors.

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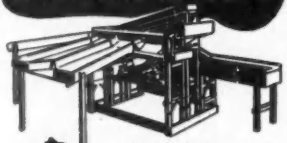

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TRESCOTT Market-Maker PEACH MACHINES

...are designed right, built right, operate right. Get fruit ready faster, closer-sized, thoroughly defuzzed—in faultless condition for buyers' biggest money. They cut time, handling and high priced labor. . . . Write tonight for literature.

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Spray easily—Spray thoroughly. Spray and drive your tractor—Save money with

HAMILTON SWIVEL GUNS
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Spray guns of all types—30 years' experience

Streamlined BAR-WAY HOSE COUPLINGS *for Safety - Efficiency*

"Just what we want," says Morse Orchards, Waterford, Va. Why? Bar-Way is the only replaceable coupling with full size dia.; no reduction in flow — economical — will not fail. Tested to over 3000 lb. Remember, buy only full-diameter hose, 600-800 lb. working pressure, 2000 lb. or over burst. Write for complete hose and coupling specifications.

WILL NOT FAIL

BAR-WAY MFG. CO. Stamford, Conn.

WATER MAKES BERRIES

(Continued from page 9)

two centrifugal pumps, powered by a 150 horsepower electric motor, throws 1300 gallons per minute. The other, run by a 15 horsepower motor, pumps 350 gallons a minute. A vacuum pump is used to prime the two centrifugal pumps.

Portable System Used

The irrigation system is a portable one with quickly detachable joints or couplings. About five miles of pipe is in use, a third of it in eight-inch and six-inch mains and the remainder in four-inch laterals on which sprinklers are attached. Each sprinkler nozzle, mounted on a two-foot riser, covers a radius of 40 feet, and 75 to 100 are in operation at one time. Nozzles are spaced five pipe lengths apart, or about 80 feet.

The Mummas have found it important with their system to have not more than 10 nozzles to a lateral. If more nozzles were used, the pressure in the end ones would not be sufficient to throw enough water.

The main lines are laid in fence rows and along the sides of fields where because they are out of the way they can remain permanently. Bernard said it is cheaper to buy enough main line to cover the area than to have a lesser amount and be forced to move it when irrigating. Moving pipe requires a lot of labor.

Laying Lateral Pipe

A convenient way to lay lateral pipe was devised in the Mumma shop. A tripod carrier was built over one of their small crawler tractors and on this are piled several lengths of lateral pipe. While the tractor is driven slowly down the row of berries the pipe is slid off from the back of the tractor and joined together. It takes about seven experienced men one day to lay the pipe on the 30 acres. Experience in irrigation work, the Mummas reiterate, is necessary if your help is to work efficiently.

For normal irrigation in strawberries the laterals are laid 22 berry rows apart, the rows being spaced at 42 inches. In this manner each sprinkler covers 11 rows on either side. To insure water reaching all parts of the patch, the nozzles on the laterals are alternated in the rows; in other words, the nozzles in every other row are opposite each other.

Wind resistance is another important consideration. If the wind is high from the west, the rows to the west of the laterals will not receive adequate watering. To insure uniform coverage, the Mummas start

their irrigating in the evening between four and six o'clock and irrigate at night when wind resistance is lowest. The laterals are usually moved during the day but if it is necessary to cover more acreage the pipe can be moved at night.

HANDY ANDY

An ingenious portable ladder made of steel barrels bolted together and set on the brush-snow-plow attachments of a tractor has saved considerable man hours at the Crane Orchards in Fennville, Mich. In fact, Blakeslee Crane says that two men can do about the work of six with half the effort. Holes have been cut in the barrels for a toe and hand hold, and the man stands in the top barrel from which he prunes. The first time over the orchard three barrels are used, and the final pruning is done from six barrels at a height of 20 feet. An area of about 10 feet can be covered and the orchardist can reach down to the 14-foot level. The tractor is pushed into the tree openings at the corners, and the device eliminates the moving of ladders or climbing up and down.

"When do you irrigate?" I asked Bernard. "Whenever it begins to get dry during the berry growing and ripening season," was his reply. "Our heaviest applications have been just before and during harvest," he stated. Then he added, "It is important to continue watering once you start. If you don't you will lose all you have gained and the berries will dry up in a hurry. We had such an experience one year on a small patch and now, once we start, we keep watering until harvest is over."

I queried the Mummas on the subject of freeze-outs. "We haven't had a strawberry crop failure in 14 years. If the weather turns cold and freezing when berries are in bloom, we

(*Continued on page* 34)

Strawberries...

from Cactus Plants?

No, not quite! But to a foreign businessman on his first visit to the U. S., it seemed that *must* be the answer when in mid-winter at a smart desert hotel, he was served fresh, luscious strawberries.

To his question "How, please, do they grow strawberries *here?*" there came an immediate answer.

"They don't. They ship 'em in instead. Fresh or frozen, in refrigerator cars—by railroad. Get 'em all over the U. S. that way."

But even that doesn't tell the *whole* story of the railroads' co-operation with producers . . . For railroad agricultural agents help introduce new crops or new varieties which create new income for farmers as well as more traffic for the railroads. They work with government agricultural departments, and their agents, not only to find better ways of shipping but also to help develop new markets for foodstuffs and livestock.

It was American railroad initiative, too, that brought to the nation's farmers the agricultural demonstration train with its lectures, exhibits, demonstrations and free bulletins—products of college classroom and laboratory.

This is something beyond the routine job of seeing that cars arrive promptly for harvest . . . that foodstuffs are properly iced en route . . . or that livestock gets fed and watered on the way to market. In seeking to improve their services, the railroads strive constantly to help themselves by helping others *still more*. And this practical viewpoint has made the American railroads the most efficient, most economical, self-supporting mass transportation system in the world.

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Don't Let DROUGHT
Burn up Your Crops
We Specialize in
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FREE BOOKLET

Advertisement

From where I sit ... *by* Joe Marsh

Whitey Stops An Epidemic

Whitey Fisher ran into real trouble with his baby chicks a couple of weeks ago. "Bunch of them had colds," he told me. "Started running around like crazy and going into convulsions."

Luckily Whitey's a wide-awake boy. Without wasting any time, he isolated the funny-acting chicks, and sent a couple of them to the State Veterinarian for a check-up. Turned out they had Newcastle Disease. But—because Whitey was on the ball—the rest of the flock was saved.

It pays to keep your eyes open, and then act fast whenever you see something that isn't right. Reminds me of all the precautions tavern owners are taking these days, to make sure their places stay clean, bright and free from trouble at all times.

Because from where I sit, no matter what business you're in, it's best to keep a sharp lookout—make sure things are always up to snuff. That way you know your investment will "stay healthy."

Joe Marsh

Copyright, 1949, United States Brewers Foundation

WATER MAKES BERRIES

(*Continued from page 33*)

just turn on the irrigation, and so far it has saved our crops," was their reply. For frost prevention, the lateral pipes are spaced 44 rows apart instead of the usual 22, because the desired effect can be obtained with greater distances than when irrigating during a drought.

"As soon as the temperature goes down to 34° and the probability is that it will go lower, we start the pumps and begin sprinkling the berry plants. This isn't necessary until the blooms begin to appear. Once the water is turned on, it is not turned off until the sun is up and the ice has melted and the plants are back to normal. This method has always worked and it has saved just as many if not more berries than when water is applied during dry periods."

Blackcaps Benefit Too

Watering black raspberries is a ticklish job and the Mummas have learned the hard way how best to irrigate them. The blackcaps have to have just the right amount of water, no more, no less. One year a part of the planting was over-watered only slightly shortly before harvest. In a couple of days there were not enough good berries left to pay to pick the field. Why? Anthracnose attacked the fruit pedicels and caused the maturing berries to dry up.

Now the practice is to water raspberries only when the temperature and humidity are relatively low. If both are high, they don't irrigate, even if it is dry. A dust mulch is then the practice. Irrigation of raspberries is done, as with strawberries, only during the berry maturing and ripening season. It has saved many a crop when other plantings nearby dried up.

Irrigation Guarantees a Crop

When asked about the 1948 strawberry crop, Bernard said it was the biggest crop they had ever harvested. I wondered how that could be possible when so many other growers in the section had a short crop. "Well, you asked if irrigation paid. That's your answer. We figure that by having used our irrigation system during the freeze of May 8 and later during the ripening period, we pulled through 75 per cent more berries than we otherwise would have been able to do. In fact, we matured and picked every berry that set on the plants, something we have never before accomplished."

SPRINKLER IRRIGATION

(*Continued from page 29*)

This includes taxes, insurance, interest on investment, depreciation, and operating costs. He should figure the useful life and consequent annual depreciation for each item of the system.

The major cost is that of annual operation. It can be divided into two chief items: the power cost, including the fuel or electricity; lubricating oil and other material required for the pumping plant; and the labor cost for handling the equipment.

The cost for sprinkling systems will vary widely depending upon the size and shape of areas to be irrigated, the soil conditions, and the crop cost. Some systems in California for which the figures are available varied from $50 to over $300 per acre. In Colorado costs of from $25 to $150 have been reported, and in Michigan the costs have been said to vary from $80 to $100 per acre.

The cost for handling the system, like the cost for the equipment and installation, is quite variable. It has been reported to be from one-half to three-fourths man-hour per acre in Colorado, while one report from Michigan states that labor for portable pipe irrigation is about two man-hours per acre inch of water applied. In California this cost may exceed $1.00 per acre inch.

NATIONWIDE FRUITS

(*Continued from page 16*)

lark's food is animal matter, including ground insect species such as beetles, bugs, grasshoppers, and caterpillars. During the summer about 36 per cent of the menu of the bobwhite quail is insect food, including army worms and cutworms.

The above dietary information on birds may encourage growers to try means of attracting these helpers to their orchards. A southern Indiana grower who harvests around 50,000 bushels of apples a year is authority for the statements: "I find it very helpful to place a few bird houses in the vicinity of the orchard to attract wrens, bluebirds, martins, and other insect-eating birds."

H. H. Michaud, of Purdue University Department of Forestry, in furnishing the above bird facts in *Hoosier Horticulture*, states that by far the most important consideration is to maintain a few environmental conditions that will benefit the birds. A few tangled thickets, scattered hedges, trees, and shrubs for nesting and escape cover will greatly increase bird population near an orchard. It is best to use shrubs that will offer ample food as well as good cover.

4 WAY IRRIGATION
with
ONE LOW COST
RACEBILT
Only RACEBILT offers these money-saving 4-way advantages in one lightweight, durable, easily portable aluminum irrigation system: SPRINKLER... RISERS... FLOOD LINES... and GUN LINES which give up to four-acre coverage from one nozzle setting!
The coupling is the key to long life in every irrigation system. RACEBILT couplings are as strong as mild steel—solidly built to last longer. Be sure the system you buy meets these high standards—be sure to specify RACEBILT!
Write today for free planning service and a copy of RACEBILT'S new, illustrated irrigation brochure. It's yours for the asking!
Race AND the Race

DANGER — Don't Let This Happen!
COP-O-ZINK
TTC
TENNESSEE CORPORATION
NEUTRAL COPPER-ZINC
SPRAY OR DUST
A neutral product that requires no lime. Contains 42% copper as metallic and 11% zinc as metallic. This combination of copper and zinc aid each other in producing more effective control.
Can be used as spray direct in spray tanks—can be used in dust mixtures.
COP-O-ZINC is compatible with organic insecticides.
DEMAND that Tennessee Tri-Basic Copper Sulphate be used when buying copper dust or spray mixtures.
TRADE MARKS OF QUALITY
NU-Z
TRI-BASIC
COPPER SULPHATE
"MICROGEL"
TENNESSEE TC CORPORATION

OPPORTUNITY ADS

Only 15c a Word—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland 13, Ohio

AGENTS WANTED

AMAZING OFFER—$40 IS YOURS FOR SELLING only 50 boxes Christmas cards. Also 50 and 25 for $1.00 with or without name. Free samples. Other boxes on approval, including entirely new, different deluxe assortment with feature television card. Cute plastic assortments. Write today! It costs nothing to try. CHEERFUL CARD COMPANY, 701, White Plains, New York.

BEES

ITALIAN QUEEN BEES $.75 EACH. W. G. RALEY, Route 4, Montgomery, Alabama.

BUSINESS OPPORTUNITIES

EARTHWORM BREEDING, VALUABLE BULLETINS on successful methods mailed free. EARTHMASTER PUBLICATIONS, Dept. 7, Sun Valley, California.

CHAINS

CHAINS—TRACTOR, TRUCK, ROAD GRADER, BUS. Write for circular, give tire sizes—Prompt shipment. HORNER TRACTOR SALES, Geneva, Ohio.

CIDER MILLS

FOR SALE—CIDER PRESSES, NEW AND REBUILT Farquhar and Mt. Gilead Presses. Repairs and supplies for all makes of presses furnished. Apple Butter Equipment. Small Apple Slicers, Tanks. W. G. RUNKLES' MACHINERY COMPANY, 185 Oakland Street, Trenton, New Jersey.

DOGS

COON, FOX, BEAGLE, COLLIE, POINTER, SETTER and Terrier pups. Reasonable. Write KEYSTONE KENNELS, Richfield, Pa.

FOR SALE—EQUIPMENT & SUPPLIES

QUICK LIFT POWER LAWN MOWERS. FREE FOLDer. WILSON HUGHEY, Nardin, Oklahoma.

HARDIE SPRAYER, 35 GAL. PER MIN., 300 GAL. tank, 25 h.p. 4 cyl. radiator cooled Continental engine. Mounted on skids, used very little and in excellent condition. Price: $1000.00. LEHIGH VALLEY NURSERIES, INC., 1745 Linden St., Bethlehem, Pa.

AMAZING INVENTION—"SOFTEE AUTOMATIC WAter Softener" offers soft-water instantly! Ideal for home and farm. Makes chores easier. Saves $150 yearly. Durable aluminum unit contains Zeolite. For any faucet—anywhere. Only $9.95. Free home trial! PLASTIC-TREND CO., 1900 Euclid Ave., Cleveland, Ohio.

HAMSTERS

RAISE GOLDEN HAMSTERS. NICE BREEDING PET and lab. stock. Pair $3.00. JOHN EVERETT, Bliss Pl. Hillsboro, Illinois.

HELP WANTED

MAN AND WIFE—PERMANENT. MAN TO WORK small cherry and apple orchard, Washington Island, Wisconsin, and in woods during winter. Wife to cook and help with housework while owner is there. Separate small, modest house on place available. Please give experience as farmer or orchardist, age, religion, etc., references if possible. Opportunity of developing the place when proven satisfactory. WRITE AMERICAN FRUIT GROWER, Box 88, 1370 Ontario Street Cleveland, Ohio.

HORSE TRAINING

"HOW TO BREAK AND TRAIN HORSES"—A BOOK every farmer and horseman should have. It is free; no obligation. Simply address BERRY SCHOOL OF HORSEMANSHIP, Dept. 1386, Pleasant Hill, Ohio.

MISCELLANEOUS

"KEEP OUT" SIGNS (OR ANY TWO WORDS). PROcess printed on 6 x 14 masonite, black letters on silver. 3 for $1.00. OEHLER, Celt, Missouri.

WINES. MAKE YOUR OWN FROM RAISINS, grapes, berries. No special equipment needed. Printed directions 25c coin. OZARK ENTERPRISE, Colt 6, Missouri.

PATENTS

NATIONAL TRADE MARK COMPANY, MUNSEY Building, Washington, D. C.

PET STOCK

67 VARIETIES, PIGEONS, PEAFOWLS, PHEASANTS, Monkeys, Rabbits, Pigs, Mice, Bees, Hamsters. Catalogue 10c. Free List. HOUCK FARM, Tiffin 2, Ohio.

PIPE

THE IDEAL PIPE FOR IRRIGATION PURPOSES! 4" and 6" NEW light weight, high pressure pipe, 20' lengths, complete with new couplings, gaskets and bolts—all ready for quick installation. IMMEDIATE SHIPMENT ON AN OUTSTANDING GRADE OF PIPE—PRICED TO SELL! Because of its light weight, one man can carry a joint of 4" and two men can easily carry a joint of 6". The couplings are complete and by reason of their simple construction can be applied with common labor—just a matter of screwing together a couple of bolts. Also a complete stock of all other size pipe from 1¼" OD in diameter on up, in either new or a No. 1 grade of used. STEEL BUILDINGS—all sizes and types, from 4,000 sq. ft. and larger. LOUIS GREENSPON, INC., Overland 14, St. Louis County, Missouri. Phone: Winfield 5130.

POSITION WANTED

COLLEGE INSTRUCTOR, 27, SINGLE, DESIRES northeast pomology experience, permanent or temporary. Horticulture M.S. degree; available August. WRITE AMERICAN FRUIT GROWER, Box 89, 1370 Ontario Street, Cleveland, Ohio.

POULTRY

MOTTLED HOUDANS, MY SPECIALTY, EGGS, Chicks, Stock, Circular. FRED BRENON, Box A, Watertown 15, New York.

PEAFOWL, SWANS, PHEASANTS, BANTAMS, Guineas, Waterfowl. Thirty Varieties Pigeons, Stock, Eggs. JOHN HASS, Bettendorf, Iowa.

WANTED TO BUY

WANTED UNIMPROVED FARM, RATHER CHEAP. HERBERT AYER, Route 1, Newtown, Ohio.

WANTED—APPLE GRADER WITH BRUSHER AND polisher. Must be in operating condition. Good specs. Give Price. PHILIP EATMAN, RD 4, New Castle, Pa. Phone New Castle 9009 R 13.

WANTED—APPLE GRADER IN GOOD CONDITION. State size, make and price. HENRY HART, Noxon Road, Poughkeepsie, New York.

I think Lem's pushin' his luck — even if them B.F.Goodrich tires will go almost anywhere!

Farm tractor tires must "go almost anywhere." And that's one of the reasons B.F. Goodrich tires are so popular. Many of the farmers from coast to coast who voted 2 to 1 for the BFG type of tread made statements such as: "B. F. Goodrich tires are best in soft going," "I never bog down with BFG tires," etc. This wide preference for BFG is easy to understand. Just watch a B.F.Goodrich tractor tire in action! The tire is *flexible* because the cleats aren't joined. There are no closed pockets to pack with mud. The clean tread gives extra traction that saves time and fuel. Too, the husky BFG cleats give long wear, another money saver. Take a tip from farmers who have used them; *buy open center B.F. Goodrich tractor tires.*

An advertisement of The B.F.Goodrich Company, Akron, Ohio.

MULCHING WITH WOOD CHIPS

(*Continued from page* 14)

To this must be added the cost of applying the mulch. In an apple orchard having 30 trees to the acre, the initial cost for straw would be $72. Adding cost of placing the straw, the per acre cost will approximate $90.

Assuming that *twice* as many pounds of chips were used as is recommended for straw, or 600 pounds, the initial cost of the wood mulch per tree would be $2.10. Cost per acre for 30 trees would be $63 or a saving of $27. Since chips will last from three to five times as long as straw, on a five-year basis the estimated savings by using wood chips should exceed $150 per acre.

Chips can be made to size so as to meet the needs of the orchardist, the nurseryman, or the strawberry grower. They represent a low fire hazard and coarse chips, ¼ inch thick and ½ to 2 inches long, will not pack tight or mat, thus allowing for desired aeration and ready entrance of rain water. On wet soils coarse chips will make an excellent roadbed and will keep soil from compacting under heavy machinery. Finally, wood chips provide an excellent soil cover, thus guarding against erosion.

As increasing populations make greater demands for food, improved farm management and soil husbandry practices must be adopted. Organic matter on top of our soils to protect them from beating rains and dashing surface waters, and in our soils to give them life and stability, must be constantly used. Wood is organic matter, and wood chips offer desirable advantages as a mulch material.

Perfection Irrigation Sprinklers

ARE THE LAST WORD IN ORCHARD IRRIGATION

These gun-type sprinklers are convenient to handle, labor-saving, economical and operate with a minimum of pressure. They are made to fit all makes of 4", 5", or 6" steel or aluminum irrigation pipe.

We have had much experience and will gladly help you lay out your irrigation system.

Write for literature

Perfection Sprinkler Co.
ANN ARBOR, MICHIGAN

FRUIT TREES Planters Grades at Planters Prices. Peach, Apple, Pear, Plum and Prune, Cherry. Write for Prices. Drop a card for Free copy of our catalog.
CHAMPION NURSERIES
150 MAIN STREET • PERRY, OHIO

OLD LEG TROUBLE
Easy to use Viscose Home Method. Heals many old leg sores caused by leg congestion, varicose veins, swollen legs and injuries or no cost for trial if it fails to show results in 10 days. Describe your trouble and get a FREE BOOK.
V.F. VISCOSE COMPANY
140 North Dearborn Street Chicago 2, Illinois

In the Heart OF **DETROIT**
FACING GRAND CIRCUS PARK

The Tuller, a modern hotel for those who want the best! Convenient to Offices, Theaters, and Shops. Friendly, courteous service and real Hotel Comfort. The Tuller Coffee Shop or Cafeteria for your Dining Pleasure at modest prices. It pays to stay at Hotel Tuller.

VISIT OUR
COCKTAIL LOUNGE
ONE OF DETROIT'S FINEST

800 ROOMS $2.75 WITH BATH FROM

HOTEL TULLER
RICHARD C. HODGES, Mgr.

Taking the Hop Out of Hoppers

(*Continued from page 22*)

Two-year-old cherry seedling damaged by young grasshopper nymphs.

due on the cherries on the older trees. Twenty-four hours after the spray application no 'hoppers were found on the seedlings, and there were few live nymphs in the sprayed area. Two weeks later the area was still comparatively free of 'hoppers. They were beginning to move into the outer edges of the block from unsprayed areas, but they had not begun to reach damaging proportions again.

No insecticide burning on the seedlings was apparent as late in the season as the first of September and the seedlings seemed to have recovered from the attack except for a few which died early in the summer due to the severe damage.

A recent report has been made that Chlordane has caused some injury to plum foliage and buds although it can be safely applied to apples, peaches, and cherries. Until it has been found that the plum trees can withstand the effects of this material, growers are advised not to use it on such trees. It is also recommended that Chlordane should not be applied to edible crops within one month of harvest unless residues can and will be removed by washing or stripping.

CHLORDANE BOOKLET

Many growers will be interested in the four-page booklet, "Direct Control of Grasshoppers with the Chemical Chlordane," recently released by Julius Hyman & Co. This describes the proper application of Chlordane, telling how much to use and when to apply it. Why not write for this booklet to Julius Hyman & Co., Denver, Colo.

Write Today

For information on the HALE CENTRIFUGAL SPRAYER . . . and at the same time . . .

WRITE TODAY FOR INFORMATION ON HALE IRRIGATION PUMPING UNITS AVAILABLE FOR IRRIGATING AREAS FROM 1 TO 100 ACRES AND UP. PLEASE STATE SIZE OF AREA TO BE IRRIGATED & SOURCE OF WATER AVAILABLE

HALE FIRE PUMP COMPANY
Conshohocken, Pa.

IRRIGATION

Our actual experience on our own 300 acre "all irrigated" farm, plus hundreds of installations throughout the country, enable us to determine your requirements.

This Service is Free

Write for folder containing free literature and prices on Flex-O-Seal lightweight portable pipe.

- Sprinkler heads from 4 G.P.M. to 400 G.P.M.
- Engine Pumping units all sizes
- War surplus heavy duty diesel pumping units 1000 G.P.M.
- Chrysler 500 G.P.M. pumpers
- War Surplus lightweight FARM PIPE

IRRIGATION DIVISION
VEG-ACRE FARMS
CAPE COD FORESTDALE, MASS.

PENETROL
Makes Spray Chemicals Go Further—Accomplish More
A STICKER and SPREADER for the Arsenates, the Sulphates, Bordeaux Mixture and Ground Derris.
DILUTIONS—From 1 pt. per 300 gals. of water (1-2400); to 1 qt. per 100 gals. of water (1-400).
An ACTIVATOR and WETTER for Nicotine Sulphate.
DILUTIONS—From 1 qt. per 600 gals. of water (1-2400); to 2 qts. per 100 gals. of water (1-200).
NICOTROL, a complete Nicotine Spray.
Write for literature and prices.
RAY-FRIES CHEMICALS, Inc.
Dept. G, 100 Madison Ave., New York 16, N. Y.

ORCHARD TESTED FRUIT TREES

We offer only varieties that have been tested in our orchard. We practice bud selection for extra quality, color and vigor, which insures you the very best in variety characteristics. We specialize in Apple, Peach, Cherry, Plum.

CATALOGUE FREE
SIMS FRUIT & NURSERY FARMS
Hannibal, Missouri

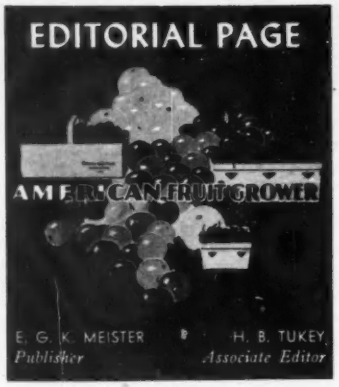
***The* AP-PEACH PICKING BAG**

Saves Time—Reduces Bruising

Heavy canvas over rigid frame protects fruit. Empties quickly through bottom. Especially for peaches and easily bruised apples. Write for folder.

JOHN C. BACON CO., GASPORT, N. Y.

HUNT'S GRAFTING WAXES, RODENT REPELLENT, ETC.
MICHIGAN BEE & FARM SUPPLY
BOX 7, 510 N. CEDAR LANSING 1, MICH.



Set Your Goals

THE FRUIT CROP is swelling on trees and vines and another season is under way. How will this season differ from the last and what changes can be made to meet new conditions?

Harvest prices will be influenced to a large extent by the supply of fruit. Although it is early to make predictions, the total fruit supply apparently will be larger this year than last, or about average.

The peach crop of the Carolinas and Georgia will be short again this year, but larger crops than last year are expected of apples, pears, plums, and sweet cherries.

Ample supplies of oranges and grapefruit are also predicted for California and Florida, although Texas citrus crops will be small due to the severe damage caused by the January freeze.

Large crops may mean lower average prices, but it is possible to reverse this trend by producing fruit of higher quality. A successful grower strives for high quality because he has found that top quality results in premium prices. Another way to give yourself a chance at higher prices is through closer grading and better packing.

Lowering cost of production per unit of output is a sure way to maintain income in the face of falling prices. Amazing lowered unit costs can be obtained by increasing yields. It costs as much to prune, spray, and fertilize a tree that bears five bushels as it does for one that yields10 bushels, yet the cost per bushel is half as large.

There is considerable management ability which must not be underestimated in achieving higher quality with higher yields.

Take time out to consider the goals you want to achieve and the most practical way of going about it. Don't be too hurried to sit down for a moment and check your progress as time goes by. You will find that wise planning will feed life into the management of your enterprise and make it possible for you to take changed cost-price conditions in your stride.

Fruit Society Yearbooks

FOLLOWING the winter fruit conventions the annual proceedings of the horticultural society meetings begin to appear. One or two societies are successful in having their yearbooks printed immediately following the meeting, but usually it takes longer. Last month we received our copies from the New York State Horticultural Society and the Ohio State Horticultural Society.

A glance at the contents gives an indication of their practical value to fruit growers. The Ohio book has a report of an unusual forum on Elements of Success in Orcharding besides reports of talks, questions and answers on marketing, spraying, and dusting, and cultural management of orchards and vineyards.

The New York Proceedings, some 360 pages long, is the kind of book you take up and don't put down until you've read it from cover to cover. The pages on "Getting back and keeping our quality" are splendid.

A membership in your State horticultural society will insure your getting the proceedings from your state society. The ideas you get from the many valuable articles in these books will be worth many times the cost of membership.

Fruit Production at a Glance

CITRUS

	1937-46	1947	May 1, Est. 1948-49
	Thousand boxes		
Oranges, Total	89,727	110,380	98,250
California, all	48,902	45,700	33,800
Navels & Misc.	18,845	18,900	12,000
Valencias	30,056	26,800	21,800
Florida, all	36,490	58,400	60,000
Early & Midseason	20,005	31,000	32,000
Valencias	16,485	27,400	28,000
Other States	4,335	6,280	4,450
Tangerines	3,360	4,000	4,400
Grapefruit, Total	47,478	61,630	45,790
Florida	23,920	33,000	30,500
Texas	17,488	23,200	12,000
Other States	6,070	5,430	3,290
Lemons	12,808	12,870	8,900

Water for the East

THE IRRIGATED LANDS of the world are the lands of bountiful production of quality goods. In our country the West has long known this. Without water it would not be in business. With water it blooms like the proverbial rose. Reclamation projects, great dams, and marvelous engineering triumphs are commonplace. They speak of the energy, the foresight, and the skill which have made the West so important to America and to the world.

But westerners who come East, brought up with an eye to water, frequently look about at the ponds, the rivers, and the lakes and ask, "Why do you not use the water for irrigation as we do?" And the usual reply is an offhand, "Oh, I don't know, we get along all right!"

Which raises the question whether it is not about time that the East awoke and really recognized the possibility of supplemental irrigation in a big way.

Energy is becoming cheaper every day. Portable pipe and modern pumps make the impossible possible. Why not use that pond or that stream? Why not develop State and regional water conservation programs? Why not have a giant pipe line connecting Lake Michigan and Lake Huron that would supply water for large sections of Michigan that are now on the dry side at critical times? Why not impound and use some of the water for irrigation that later devastates the lower reaches of great eastern rivers?

The reason this has not been done lies in the answer, "Oh, we get along all right!" Until the problem becomes acute, no one seems to notice. Long before the plant wilts and dies, yields may be reduced by lack of water at a critical time. Alert eastern strawberry growers, however, no longer think of growing strawberries without provision for supplemental irrigation.

With the new knowledge of combining water and fertilizers, we do not yet know the limits to production. What are the possibilities of adding water and fertilizers? Some staggering yields are reported where the two are properly combined.

Has the East been content to just "get by" and to cry for water only when the well runs dry?

This is one of the projects that calls for leadership closely akin to statesmanship.

Perhaps someone who reads these words will be quickened into action. If he is, and if he acts with vigor and perseverance and personality, he some day will be recognized as one of the farsighted individuals who used his talents to accomplish great good.

BE KIND TO YOUR FRUIT - *It Pays*

It takes an entire season to raise a blue-ribbon crop and only a few seconds to ruin it! Rough and careless handling and inaccurate sorting cost you money. It pays to be kind to your fruit by standardizing on John Bean packing house equipment.

HERE'S WHY!

John Bean equipment **grades carefully!** Fruit is gently carried through John Bean cleaners and graders. The larger fruit is **lifted** out, the smaller fruit travels through — doesn't drop out. It's a cushioned ride, fruit isn't bruised, sliced or squeezed.

John Bean equipment **grades more accurately!** Positive drive and support maintains precision of sizing squares. You get an accurate grade day-in and day-out, for years.

John Bean equipment **lasts longer!** Rugged handcrafted construction. Built of selected, seasoned white oak that's oil treated to guard against warp or rot.

All joints are bolted or screwed. Mortise and tennoned construction. John Bean Grabill graders have been in use more than a quarter of a century without major repair. Roller chain and accurate cut sprockets provide smooth, positive trouble-free drive. Large diameter rollers for gentle handling of fruit. Sizing chains recessed in head rollers.

John Bean equipment **cleans better!** 2-way cleaners with **bristle** brushes for cleaning and **cloth** buffers for polishing.

John fmc **BEAN**

Lansing 4, Michigan — **San Jose, California**

DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION

John BEAN PACKING HOUSE EQUIPMENT

JOHN BEAN FRUIT CLEANERS. Two-way models, bristle brushes for cleaning, cloth buffers for polishing. Capacities 500 to 3,000 bushels per day. Write for catalog.

GRABILL FRUIT GRADERS. The graders that gently lift out the largest fruit first. Variety of models and capacities. There's a Grabill Grader for every grower.

FMC CUTLER WEIGHT-PRINCIPLE GRADERS. They sort, size and handle your apples gently . . . by accurate weight-method. Even distribution into rotating packing bins.

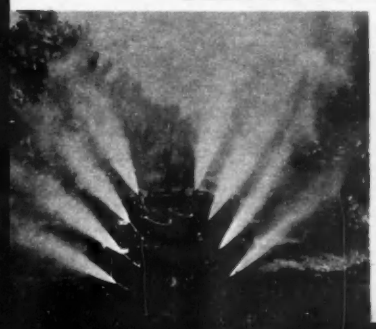
FMC CUTLER CONVEYORS. Adapt themselves readily to any installation. Sturdy, trouble-free. Reduce labor and handling costs and provide smooth handling of the packed crop.

JOHN BEAN NIAGARA-TYPE PEACH GRADERS. Complete line of equipment for peaches and pears, with models designed to fit the needs of any commercial grower or packer.

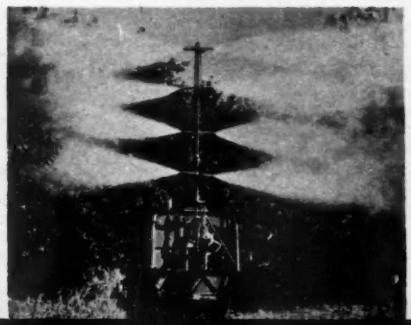
STERICOOLER. Solves transit spoilage problems by pre-cooling and sterilizing. Extends shelf life of fruit. Stericooled fruits and vegetables command a premium price at market.

☆

John Bean LOW-BOY. 8-gun mast for fast, thorough coverage in small trees, close plantings, or where there is considerable over-hang.



8-gun AUTOMAST. Output: to 60 gals. per min. Sprays either or both sides. Full control by one man driving tractor.



SPEED SPRAYER saturates tree for complete protection. Fast, thorough one-man operation for coverage of 50 or more acres per day.

Don't Share Your Profit

WITH

Red Mite!

Red mite has become the Number 1 problem in many apple sections. Watch *your* trees—don't let mites get a head start! *DN*-111 and *DN*-Dust D-4 remain the best red mite controls available to apple growers. Summer applications of either *DN*-111 or *DN*-Dust D-4 have held average mite population to less than one mite per leaf! Leaves stay green and active—larger, more highly colored apples develop—dropping of immature apples is reduced—effectiveness of harvest sprays is increased.

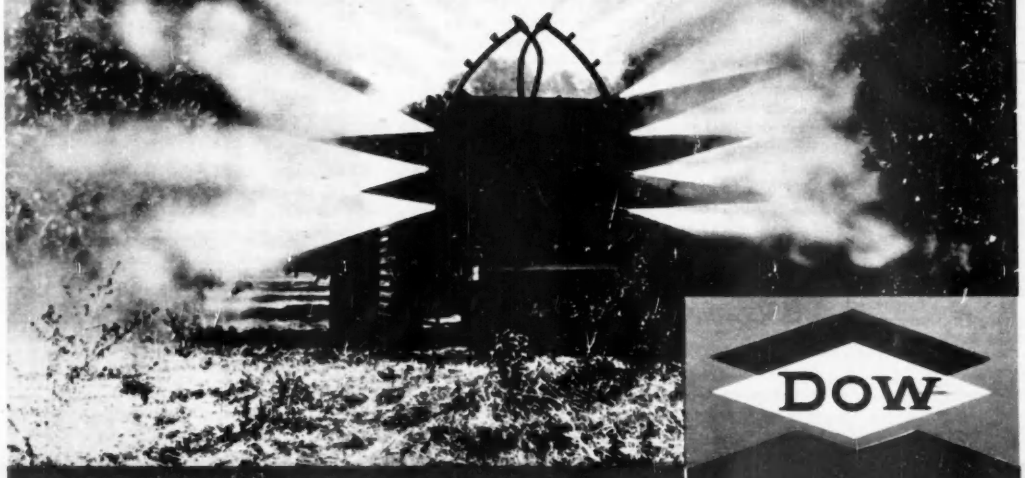
CLEAN FRUIT SELLS!

Spray thoroughly with *DN*-111, particularly on underside of leaves. If you prefer to dust, use *DN*-Dust D-4. This superior dusting mixture retains its toxicity four to five days after application, thus killing young mites hatched after the original dusting. Consult your state experiment station or qualified dealer. Be ready to start spraying as soon as the first mite is seen—before foliage appears bronzed.

D.N.-111 and *D.N.*-DUST D-4

THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada



DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND AGRICULTURE

USE DEPENDABLE DOW AGRICULTURAL CHEMICAL PRODUCTS

WEED AND VINE KILLERS · INSECTICIDES · FUNGICIDES
SEED PROTECTANT · PLANT GROWTH REGULATORS
GRAIN AND SOIL FUMIGANTS · WOOD PRESERVATIVE